[redacted] NWO

From: Farhat, Jody S NWD02
Sent: Tuesday, February 01, 2011 12:46 PM
To: [redacted] NWD02; [redacted] NWD02
Cc: [redacted] NWD02; [redacted] NWD02
Subject: FW: Feburary 2011 Runoff Forecast (UNCLASSIFIED)
Attachments: Runoff_Forecast_Feb2011.pdf; 2011Feb.docx

Classification: UNCLASSIFIED
Caveats: NONE

[redacted], please review.

All - we can discuss after briefing.

Kevin S - in the future, please include Mike and Joel on your draft runoff forecast. Since they are watching it every day and making intrasystem adjustments, they need to be included in the decisions.

Jody

-----Original Message-----
From: [redacted] NWD02
Sent: Tuesday, February 01, 2011 12:33 PM
To: Farhat, Jody S NWD02
Cc: [redacted] NWD02
Subject: Feburary 2011 Runoff Forecast (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jody,

Please have a look at the runoff forecast, and we can discuss it later today.

The overall calendar year 2011 runoff forecast is 25.8 MAF (113% of normal) above Gavins Point dam and 30.2 MAF (122% of normal) above Sioux City, IA.

The accumulation of plains snow is above normal in the Northern Plains. In the Fort Peck subbasin, snow accumulation is light; however, in the Fort Peck to Garrison subbasin, the snow accumulation is considered in much of the Milk, lower Yellowstone River, Little Missouri, and Missouri River basins. The snow accumulation in the Oahe subbasin is average, while it is light in the Fort Randall and Gavins Point subbasins. The Sioux City reach contains moderate snow accumulations in a majority of its river basins. Mountain snow accumulations as a percent of long-term averages are 112% of normal in the Fort Peck subbasin and 111% of normal in the Fort Peck to Garrison subbasin.

NOAA's Climate Prediction Center outlook indicates higher probabilities of precipitation in the Northern Rockies and Plains. Combined with cooler temperatures through April, snow accumulation trends will continue at their existing above-normal pace.

With regard to March and April runoff, the higher than average snow pack has led us to set the percent of normal runoff above Gavins Point at 135% of normal in March and 138% of normal in April. The May-July runoff above Fort Peck will be 106% of normal while in the Fort Peck to Garrison reach it will be 108% of normal. All runoff is expected to return to normal

above Gavins Point by August 2011 with the exception of the Sioux City subbasin. High antecedent moisture conditions, moderate snow pack, and high historic streamflows will continue to produce well-above normal runoff throughout the calendar year.

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Classification: UNCLASSIFIED
Caveats: NONE

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Caveats: NONE

Missouri River Basin
Calendar Year 2011
Forecasted

1-Feb-11

Reach Above	Fort Peck	Garrison	Oahe	Fort Randall	Gavins Point	Sioux City	Summation above Gavins Point	Summation above Sioux City	Accumulated Summation above Sioux City
				Values in 1000 Acre Feet					
	(History)								
JAN 2011	437	309	116	86	67	266	1,015	1,281	1,281
NORMAL	312	261	12	25	100	40	710	750	750
DEPARTURE	125	48	104	61	-33	226	305	531	531
% OF NORM	140%	118%	965%	346%	67%	664%	143%	171%	171%
	(Forecast)								
FEB 2011	400	370	95	50	100	200	1,015	1,215	2,496
NORMAL	360	356	90	49	130	92	985	1,077	1,827
DEPARTURE	40	14	5	1	-30	108	30	138	669
% OF NORM	111%	104%	106%	102%	77%	217%	103%	113%	137%
MAR 2011	619	1,518	866	228	253	941	3,484	4,425	6,920
NORMAL	596	1,003	567	209	206	299	2,581	2,880	4,707
DEPARTURE	23	515	299	19	47	642	903	1,545	2,213
% OF NORM	104%	151%	153%	109%	123%	315%	135%	154%	147%
APR 2011	757	1,518	866	152	207	941	3,500	4,440	11,361
NORMAL	649	1,080	481	144	180	360	2,534	2,894	7,601
DEPARTURE	108	438	385	8	27	581	966	1,546	3,760
% OF NORM	117%	141%	180%	106%	115%	261%	138%	153%	149%
MAY 2011	1,148	1,339	400	147	186	600	3,220	3,820	15,181
NORMAL	1,081	1,245	312	147	186	292	2,971	3,263	10,864
DEPARTURE	67	94	88	0	0	308	249	557	4,317
% OF NORM	106%	108%	128%	100%	100%	205%	108%	117%	140%
JUN 2011	1,720	2,880	470	152	178	500	5,400	5,900	21,080
NORMAL	1,612	2,667	423	152	178	286	5,032	5,318	16,182
DEPARTURE	108	213	47	0	0	214	368	582	4,898
% OF NORM	107%	108%	111%	100%	100%	175%	107%	111%	130%
JUL 2011	871	1,922	190	57	137	375	3,177	3,552	24,633
NORMAL	819	1,776	179	57	137	218	2,968	3,186	19,368
DEPARTURE	52	146	11	0	0	157	209	366	5,265
% OF NORM	106%	108%	106%	100%	100%	172%	107%	111%	127%
AUG 2011	353	604	65	39	115	220	1,176	1,396	26,029
NORMAL	353	604	65	39	115	131	1,176	1,307	20,675
DEPARTURE	0	0	0	0	0	89	0	89	5,354
% OF NORM	100%	100%	100%	100%	100%	168%	100%	107%	126%
SEP 2011	333	452	111	38	111	160	1,045	1,205	27,234
NORMAL	333	452	111	38	111	99	1,045	1,144	21,819
DEPARTURE	0	0	0	0	0	61	0	61	5,415
% OF NORM	100%	100%	100%	100%	100%	162%	100%	105%	125%
OCT 2011	385	523	66	5	120	86	1,099	1,185	28,419
NORMAL	385	523	66	5	120	78	1,099	1,177	22,996
DEPARTURE	0	0	0	0	0	8	0	8	5,423
% OF NORM	100%	100%	100%	100%	100%	110%	100%	101%	124%
NOV 2011	384	398	67	6	118	83	973	1,056	29,475
NORMAL	384	398	67	6	118	76	973	1,049	24,045
DEPARTURE	0	0	0	0	0	7	0	7	5,430
% OF NORM	100%	100%	100%	100%	100%	109%	100%	101%	123%
DEC 2011	329	247	0	12	100	56	688	744	30,219
NORMAL	329	247	0	12	100	52	688	740	24,785
DEPARTURE	0	0	0	0	0	4	0	4	5,434
% OF NORM	100%	100%	100%	100%	100%	108%	100%	101%	122%
				Calendar Year Totals					
	7,736	12,080	3,313	972	1,692	4,427	25,792	30,219	
NORMAL	7,213	10,612	2,373	883	1,681	2,023	22,762	24,785	
DEPARTURE	523	1,468	939	89	11	2,404	3,030	5,434	
% OF NORM	107%	114%	140%	110%	101%	219%	113%	122%	

February 2011 Calendar Year Runoff Forecast

2011 January Runoff

January 2011 runoff above Sioux City, IA, was 170.8% of normal at 1280.8 KAF. Fort Peck received 437.4 KAF (140%), Garrison received 308.5 KAF (118%), Oahe received 115.8 KAF (965%), Fort Randall received 86.4 KAF (346%), Gavins Point received 67 KAF (67%), and the Sioux City reach received 266 KAF (664%).

Antecedent Moisture & Precipitation

Soil moisture conditions on January 30, 2011 continue to rank very high in the Northern Plains including eastern Montana and the Dakotas, and the Northern Rockies in Montana and northwest Wyoming. Soil moisture conditions rank in at least the 70th percentile, with particularly wet areas ranking 90 percent or higher. The Upper Missouri basin in the Northern Rockies, northeast Montana, northern North Dakota, and eastern South Dakota all rank in the 99th percentile for soil moisture. Wetter than normal conditions also exist in southeast Wyoming, much of Nebraska and Iowa.

Precipitation during the month of January was well-above normal throughout most of the Missouri River basin. Greater than 175% of normal occurred throughout much of the basin upstream of Rulo, NE. As a result, Northern Plains and Northern Rockies snow accumulations benefitted greatly.

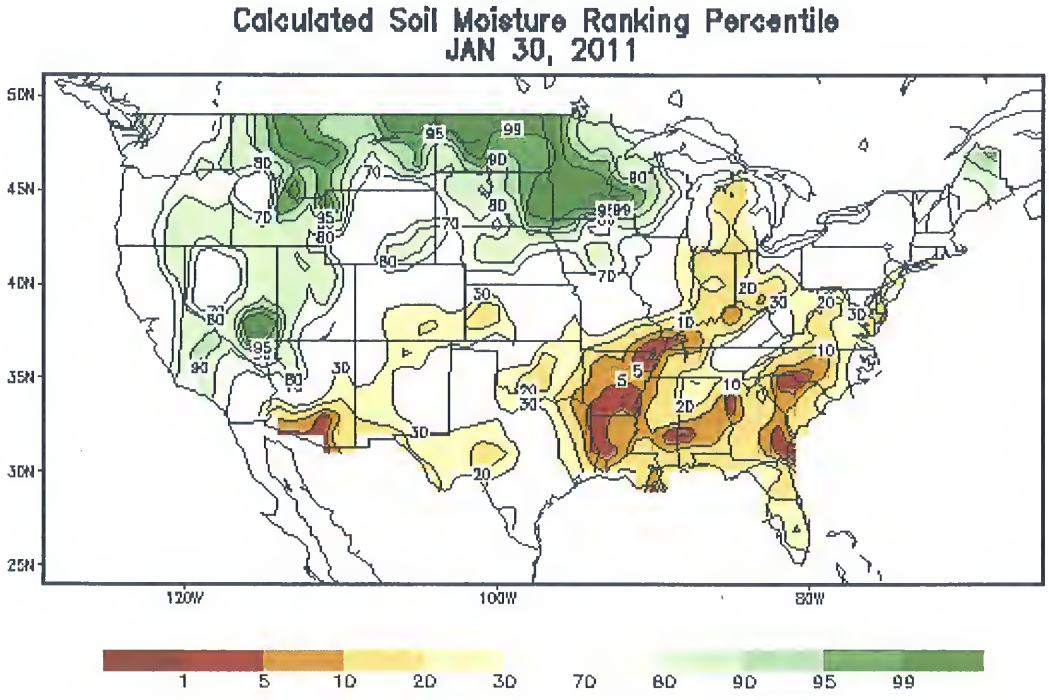

Figure 1 End of January 2011 Soil Moisture Ranking Percentile.

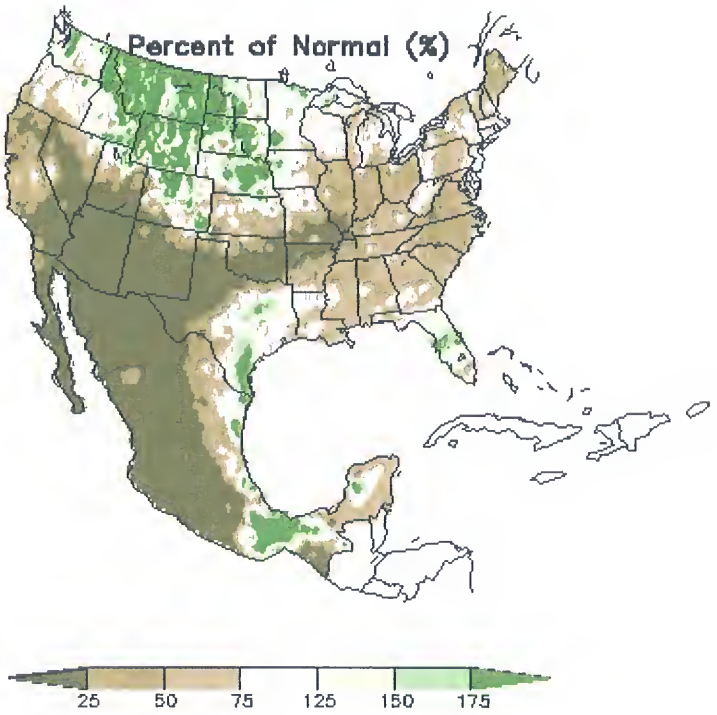

Figure 2. 30-day precipitation as a percent of normal, ending January 31, 2011.

Mountain Snow Pack

Mountain snowpack as of January 31, 2011 was 112% of normal above Fort Peck and 111% of normal in the Fort Peck to Garrison reach. Missouri River Basin mountain snowpack normally peaks near on April 15. By January 1, normally 61% of the peak accumulation has occurred.

Plains Snow Pack

Plains snow pack in the Fort Peck subbasin is characterized as Light to Average while in the Fort Peck to Garrison reach it is characterized as Moderate compared to all runoff years in which snow accumulation influenced March-April runoff. According to NOAA's NOHRSC, about 1-3 inches of SWE are present in the Fort Peck subbasin, while 3-5 inches cover much of the Fort Peck to Garrison subbasin, especially in the Milk River basin and the Yellowstone River basin downstream of Miles City, MT, and the lower half of the Little Missouri basin. It is not uncommon for the NOHRSC model to estimate 5-6 inches of SWE on the plains in the lower Milk River basin and along the Missouri River and its tributaries between Fort Peck Dam and Williston, ND. SWE measurements by the NWS in northeast Montana ranged from 3.0 to 6.5 inches. Snow pack in the Fort Peck to Garrison reach on January 31, 2011, is greater than the snow pack that existed on January 31 in 2009 and 2010. It is similar to the peak amount that occurred on March 15, 2010, and much great than the peak in 2009.

Plains snow pack in the Oahe reach is characterized as Average. Snow depth in this subbasin is well above average and plains SWE is 2-4 inches according to the NOHRSC snow model.

Plains snow pack in the Fort Randall and Gavins Point subbasins are characterized as Light. In the Fort Randall subbasin, SWE ranges from 0.5-2.0 inches of SWE, while less snow exists in the Gavins Point subbasin.

Plains snow pack in the Sioux City subbasin is characterized as Moderate. NOHRSC snow model estimates indicate 3-5 inches of SWE in the upper two-thirds of the James River basin and upper half of the Big Sioux River basin, and about 1.5-2.0 inches of SWE in the lower portions of the basin. Cooperative observer measurements verify that 4 inches of SWE exist in the middle and upper James and the upper Big Sioux basins. Similar amounts of SWE were present in the Sioux City subbasin at this time in 2010; however, the estimated peak SWE on March 15, 2010, was 1.5-2.0 inches higher according to NOHRSC. Field verifications indicated NOHRSC's modeled estimates were too high.

Climate Outlook

From February - April, there is a higher probability that temperatures will continue to fall below normal in the Northern Plains and Rockies with more normal temperatures in Nebraska, Kansas, and Missouri. This should increase the likelihood that the Northern Plains snow pack and mountain snow pack will persist later into spring with limited melting.

With regard to temperatures, there is a higher probability that above normal precipitation will occur in the Northern Rockies and Plains from February - April, with precipitation trending to below normal accumulations in Colorado, Nebraska, Kansas, and western Missouri. The higher probabilities of precipitation in the Northern Rockies and Plains, combined with cooler temperatures indicate snow accumulation trends will continue at their existing above-normal pace, followed by a later season melt.

February 2011 Calendar Year Runoff Forecast

The overall calendar year 2011 runoff forecast is 25.8 MAF (113% of normal) above Gavins Point dam and 30.2 MAF (122% of normal) above Sioux City, IA.

The accumulation of plains snow is above normal in the Northern Plains. In the Fort Peck subbasin, snow accumulation is light; however, in the Fort Peck to Garrison subbasin, the snow accumulation is considered in much of the Milk, lower Yellowstone River, Little Missouri, and Missouri River basins. The snow accumulation in the Oahe subbasin is average, while it is light in the Fort Randall and Gavins Point subbasins. The Sioux City reach contains moderate snow accumulations in a majority of its river basins. Mountain snow accumulations as a percent of long-term averages are 112% of normal in the Fort Peck subbasin and 111% of normal in the Fort Peck to Garrison subbasin.

NOAA's Climate Prediction Center outlook indicates higher probabilities of precipitation in the Northern Rockies and Plains. Combined with cooler temperatures through April, snow accumulation trends will continue at their existing above-normal pace.

With regard to March and April runoff, the higher than average snow pack has led us to set the percent of normal runoff above Gavins Point at 135% of normal in March and 138% of normal in April. The May-July runoff above Fort Peck will be 106% of normal while in the Fort Peck to Garrison reach it will be 108% of normal. All runoff is expected to return to normal above Gavins Point by August 2011 with the exception of the Sioux City subbasin. High antecedent moisture conditions, moderate snow pack, and high historic streamflows will continue to produce well-above normal runoff throughout the calendar year.

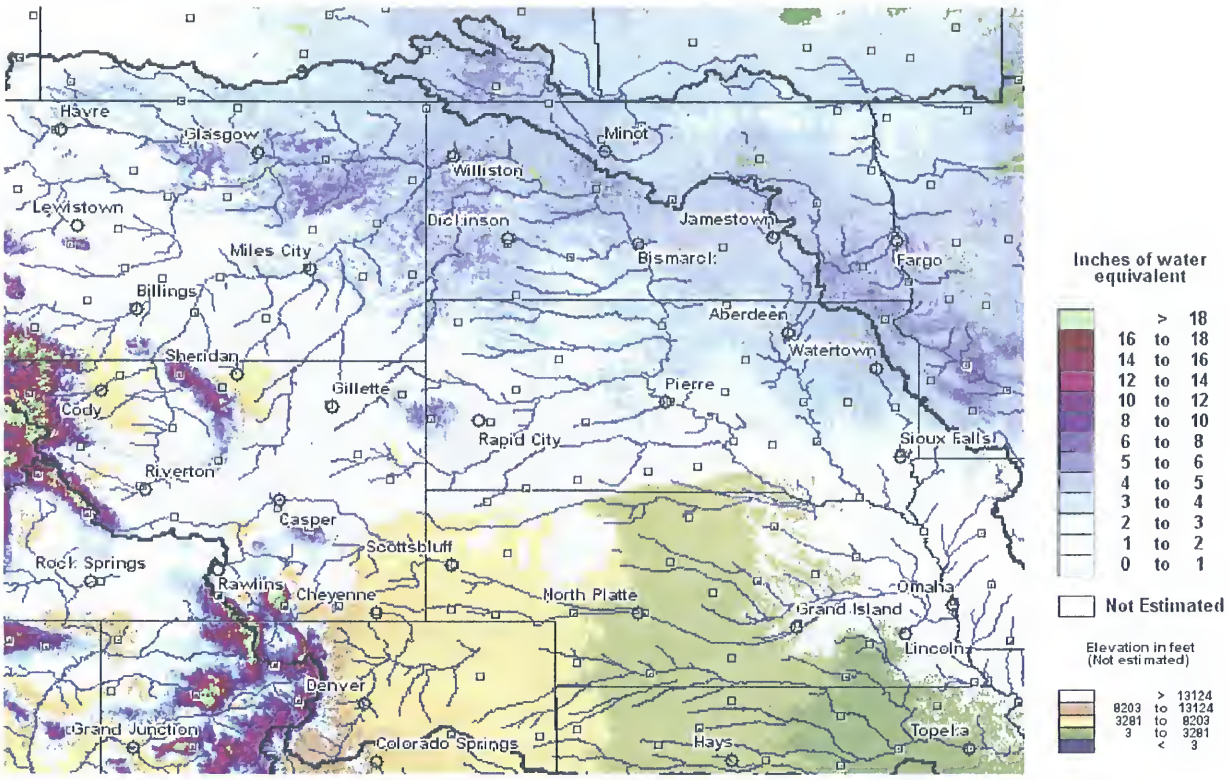

Figure 3 Plains Snow Water Equivalent (SWE) on January 31, 2011.

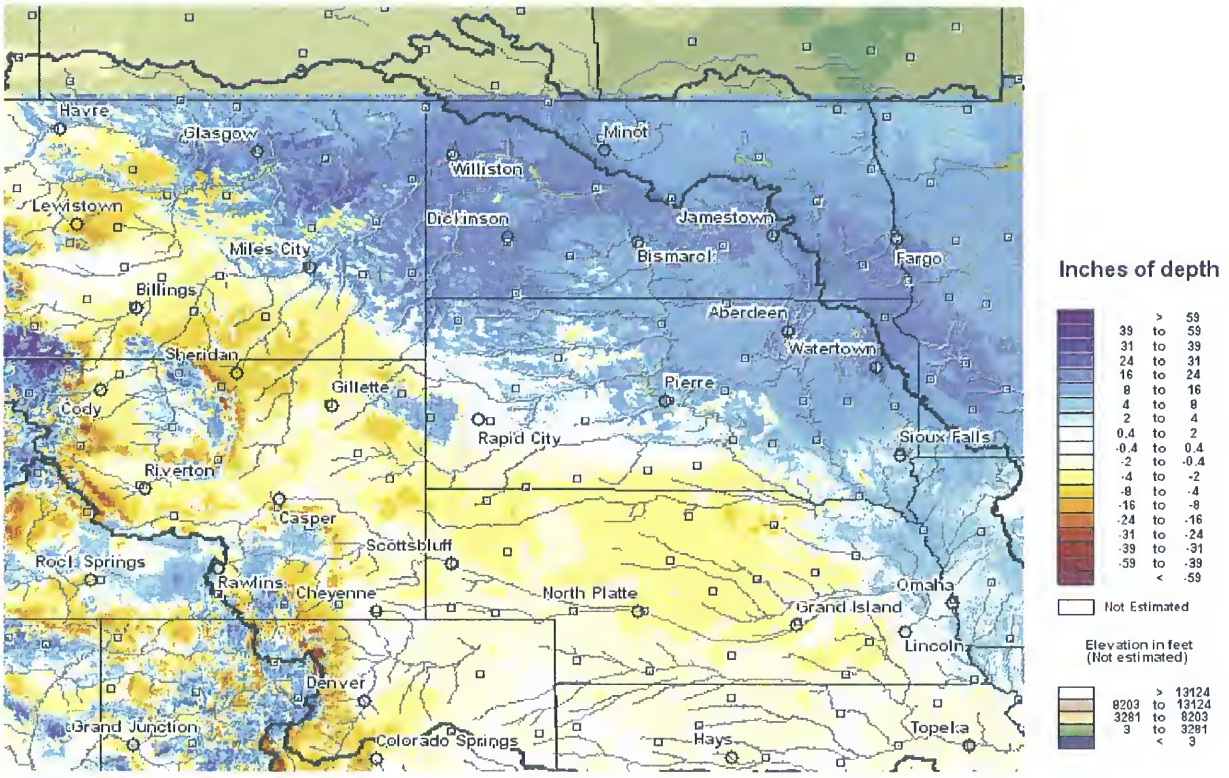

Figure 4 Plains Snow Depth Departure from Normal on January 31, 2011.

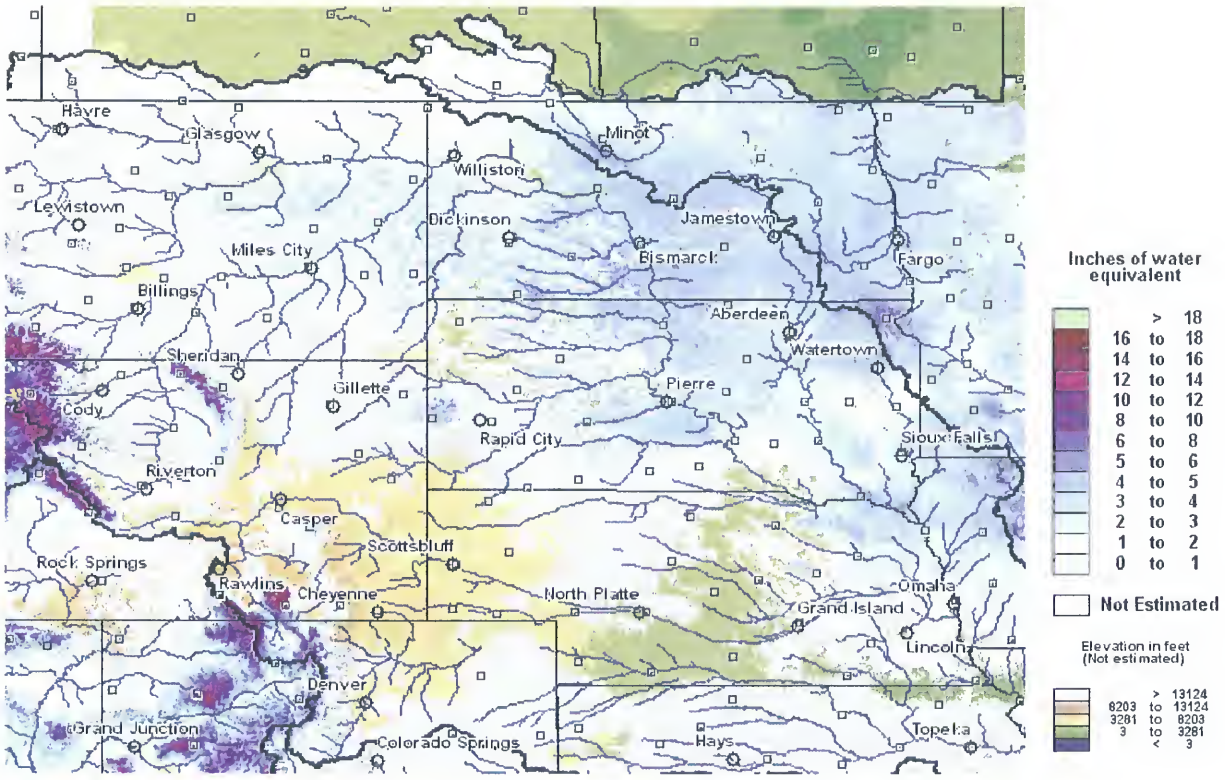

Figure 5. Plains SWE on January 31, 2010.

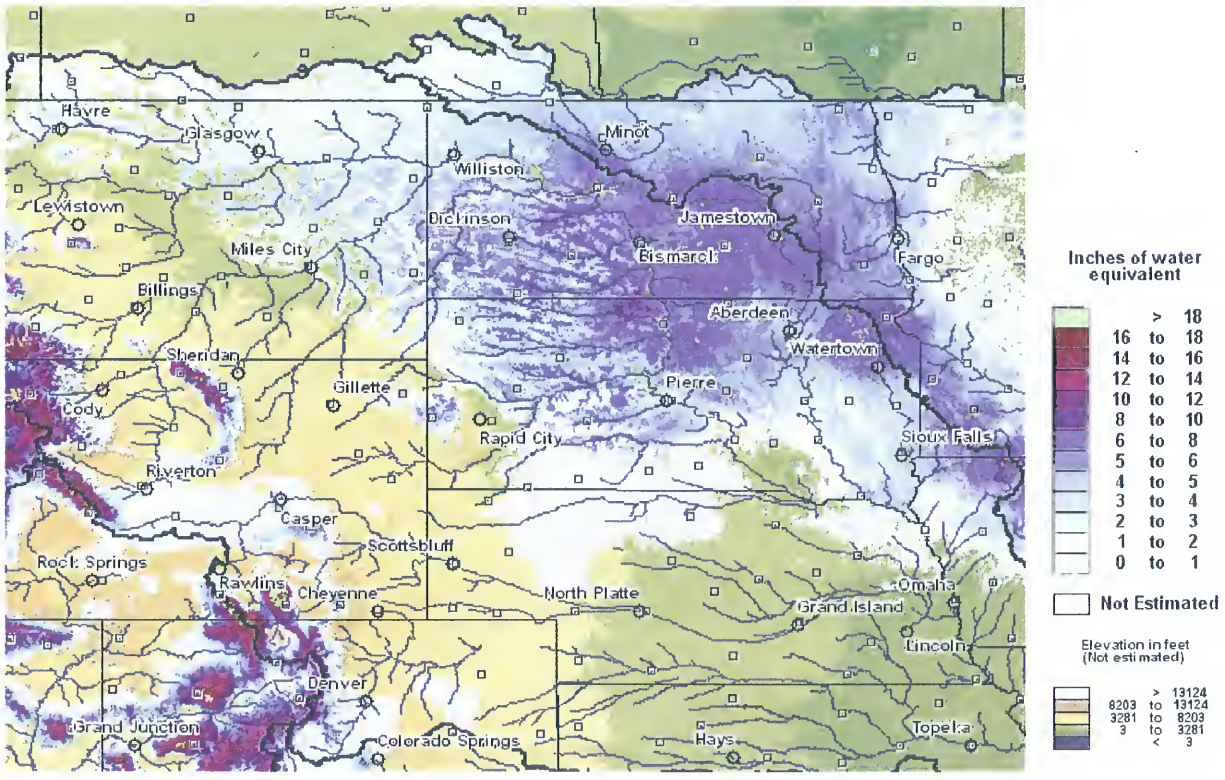

Figure 6. Plains SWE on March 15, 2010.

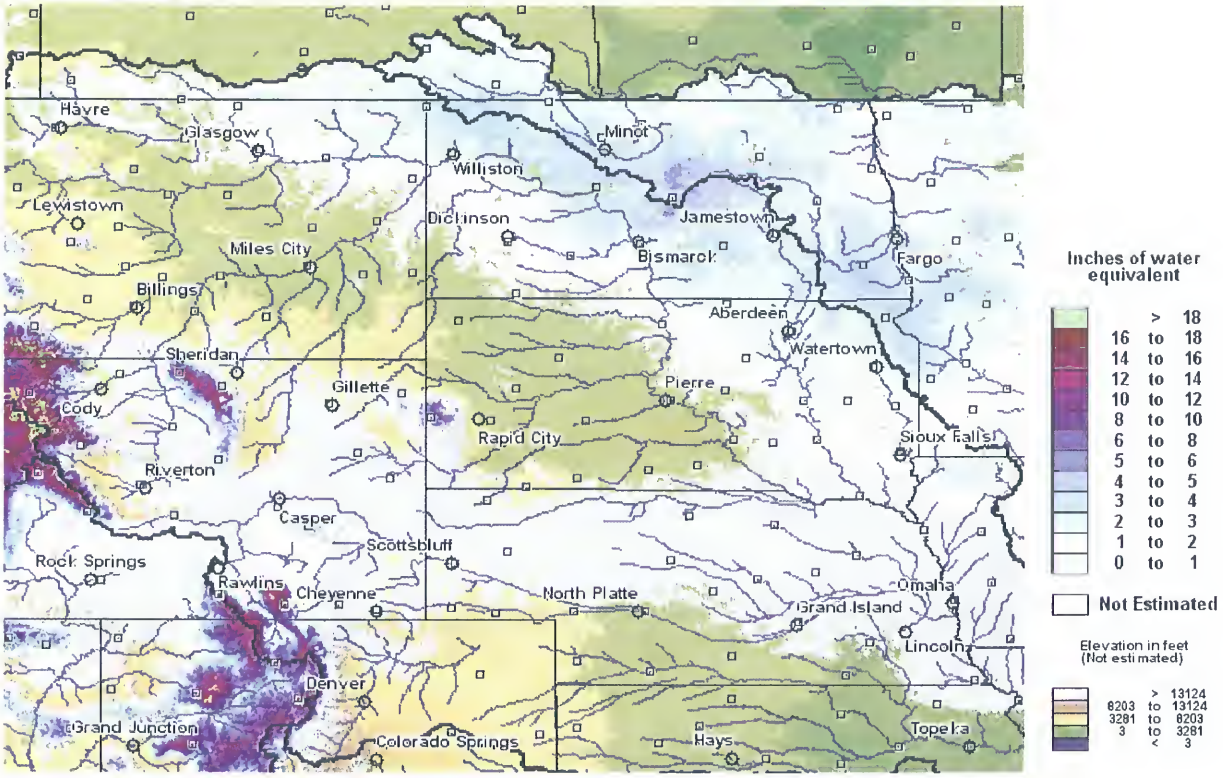

Figure 7. Plains SWE on January 31, 2009.

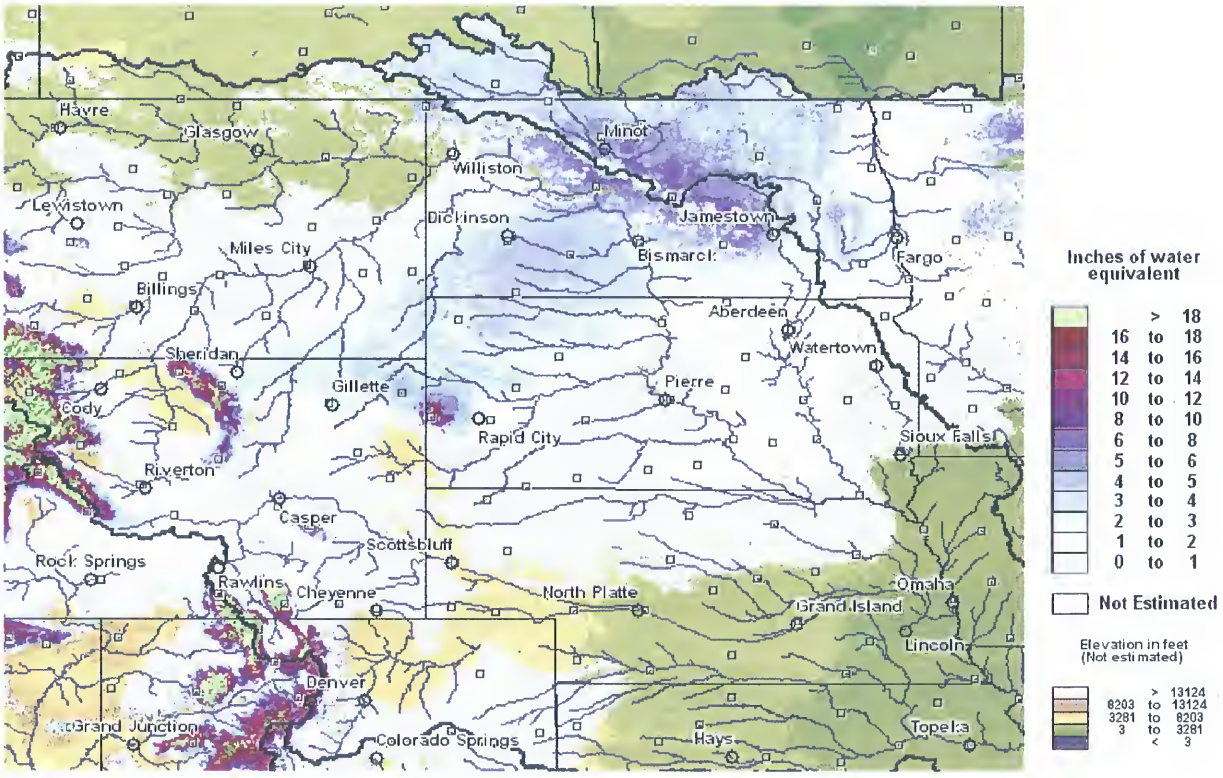

Figure 8. Plains SWE on April 2, 2009.

[redacted] NWO

From: [redacted] NWD02
Sent: Tuesday, February 01, 2011 4:27 PM
To: Farhat, Jody S NWD02; [redacted] NWD02; [redacted] NWD02; [redacted] NWD02
Cc: [redacted] NWD02
Subject: February 2011 Runoff Forecast (UNCLASSIFIED)
Attachments: Runoff_Forecast_Feb2011_Final.pdf; 2011FebForecastRunoff.docx

Classification: UNCLASSIFIED
Caveats: NONE

Attached is the final runoff forecast beginning Feb. 1, 2011.

Please let me know if you have any questions.

[redacted]

[redacted].
USACE, Northwestern Division
Missouri Basin Water Management Division
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[redacted]@usace.army.mil

Classification: UNCLASSIFIED
Caveats: NONE

Missouri River Basin
Calendar Year 2011
Forecasted

1-Feb-11

Reach Above	Fort Peck	Garrison	Oahe	Fort Randall	Gavins Point	Sioux City	Summation above Gavins Point	Summation above Sioux City	Accumulated Summation above Sioux City
				Values in 1000 Acre Feet					
	(History)								
JAN 2011	437	309	116	86	67	266	1,015	1,281	1,281
NORMAL	312	261	12	25	100	40	710	750	750
DEPARTURE	125	48	104	61	-33	226	305	531	531
% OF NORM	140%	118%	965%	346%	67%	664%	143%	171%	171%
	(Forecast)								
FEB 2011	340	340	85	45	105	200	915	1,115	2,396
NORMAL	360	356	90	49	130	92	985	1,077	1,827
DEPARTURE	-20	-16	-5	-4	-25	108	-70	38	569
% OF NORM	94%	96%	94%	92%	81%	217%	93%	104%	131%
MAR 2011	619	1,430	866	228	253	594	3,396	3,990	6,386
NORMAL	596	1,003	567	209	206	299	2,581	2,880	4,707
DEPARTURE	23	427	299	19	47	295	815	1,110	1,679
% OF NORM	104%	143%	153%	109%	123%	199%	132%	139%	136%
APR 2011	757	1,430	866	152	207	594	3,412	4,006	10,392
NORMAL	649	1,080	481	144	180	360	2,534	2,894	7,601
DEPARTURE	108	350	385	8	27	234	878	1,112	2,791
% OF NORM	117%	132%	180%	106%	115%	165%	135%	138%	137%
MAY 2011	1,148	1,275	400	147	186	400	3,156	3,556	13,947
NORMAL	1,081	1,245	312	147	186	292	2,971	3,263	10,864
DEPARTURE	67	30	88	0	0	108	185	293	3,083
% OF NORM	106%	102%	128%	100%	100%	137%	106%	109%	128%
JUN 2011	1,720	2,743	470	152	178	350	5,263	5,613	19,560
NORMAL	1,612	2,667	423	152	178	286	5,032	5,318	16,182
DEPARTURE	108	76	47	0	0	64	231	295	3,378
% OF NORM	107%	103%	111%	100%	100%	122%	105%	106%	121%
JUL 2011	871	1,830	190	57	137	250	3,086	3,336	22,896
NORMAL	819	1,776	179	57	137	218	2,968	3,186	19,368
DEPARTURE	52	54	11	0	0	32	118	150	3,528
% OF NORM	106%	103%	106%	100%	100%	115%	104%	105%	118%
AUG 2011	353	604	65	39	115	150	1,176	1,326	24,222
NORMAL	353	604	65	39	115	131	1,176	1,307	20,675
DEPARTURE	0	0	0	0	0	19	0	19	3,547
% OF NORM	100%	100%	100%	100%	100%	115%	100%	101%	117%
SEP 2011	333	452	111	38	111	110	1,045	1,155	25,377
NORMAL	333	452	111	38	111	99	1,045	1,144	21,819
DEPARTURE	0	0	0	0	0	11	0	11	3,558
% OF NORM	100%	100%	100%	100%	100%	111%	100%	101%	116%
OCT 2011	385	523	66	5	120	86	1,099	1,185	26,562
NORMAL	385	523	66	5	120	78	1,099	1,177	22,996
DEPARTURE	0	0	0	0	0	8	0	8	3,566
% OF NORM	100%	100%	100%	100%	100%	110%	100%	101%	116%
NOV 2011	384	398	67	6	118	83	973	1,056	27,618
NORMAL	384	398	67	6	118	76	973	1,049	24,045
DEPARTURE	0	0	0	0	0	7	0	7	3,573
% OF NORM	100%	100%	100%	100%	100%	109%	100%	101%	115%
DEC 2011	329	247	0	12	100	56	688	744	28,362
NORMAL	329	247	0	12	100	52	688	740	24,785
DEPARTURE	0	0	0	0	0	4	0	4	3,577
% OF NORM	100%	100%	100%	100%	100%	108%	100%	101%	114%
				Calendar Year Totals					
	7,676	11,581	3,303	967	1,697	3,139	25,224	28,362	
NORMAL	7,213	10,612	2,373	883	1,681	2,023	22,762	24,785	
DEPARTURE	463	969	929	84	16	1,116	2,461	3,577	
% OF NORM	106%	109%	139%	110%	101%	155%	111%	114%	

February 2011 Calendar Year Runoff Forecast

2011 January Runoff

January 2011 runoff above Sioux City, IA, was 170.8% of normal at 1280.8 KAF. Fort Peck received 437.4 KAF (140%), Garrison received 308.5 KAF (118%), Oahe received 115.8 KAF (965%), Fort Randall received 86.4 KAF (346%), Gavins Point received 67 KAF (67%), and the Sioux City reach received 266 KAF (664%).

Antecedent Moisture & Precipitation

Soil moisture conditions on January 30, 2011 continue to rank very high in the Northern Plains including eastern Montana and the Dakotas, and the Northern Rockies in Montana and northwest Wyoming (Figure 1). Soil moisture conditions rank in at least the 70th percentile, with particularly wet areas ranking 90 percent or higher. The Upper Missouri basin in the Northern Rockies, northeast Montana, northern North Dakota, and eastern South Dakota all rank in the 99th percentile for soil moisture. Wetter than normal conditions also exist in southeast Wyoming, much of Nebraska and Iowa.

Precipitation during the month of January was well-above normal throughout most of the Missouri River basin (Figure 2). Greater than 175% of normal occurred throughout much of the basin upstream of Rulo, NE. As a result, Northern Plains and Northern Rockies snow accumulations benefitted greatly.

Mountain Snow Pack

Mountain snowpack as of January 31, 2011 was 112% of normal above Fort Peck and 111% of normal in the Fort Peck to Garrison reach. Missouri River Basin mountain snowpack normally peaks near on April 15. By January 1, normally 61% of the peak accumulation has occurred.

Plains Snow Pack

Plains snow pack as snow water equivalent (SWE) is shown in Figure 3 and snow depth departure from normal is in Figure 4. For comparison, SWE in the Missouri River basin on January 31 of 2009 and 2010 are shown in Figures 5 and 6, while peak SWE in 2009 and 2010 are shown in Figures 7 and 8, respectively.

Plains snow pack in the Fort Peck subbasin is characterized as Light to Average while in the Fort Peck to Garrison reach it is characterized as Moderate compared to all runoff years in which snow accumulation influenced March-April runoff. According to NOAA's NOHRSC snow model (Figure 3), about 1-3 inches of SWE are present in the Fort Peck subbasin, while 3-5 inches cover much of the Fort Peck to Garrison subbasin, especially in the Milk River basin and the Yellowstone River basin downstream of Miles City, MT, and the lower half of the Little Missouri basin. It is not uncommon for the NOHRSC model to show 5-6 inches of SWE on the plains in the lower Milk River basin and along the Missouri River and its tributaries between Fort Peck Dam and Williston, ND. SWE measurements by the NWS in northeast Montana ranged from 3.0 to 6.5 inches. Snow water equivalent in the Fort Peck to Garrison reach on January 31, 2011, is greater than the snow pack that existed on January 31 in 2009 (Figure 5) and 2010 (Figure 6). It bears some similarities to the peak amounts that occurred on April 2,

2009 (Figure 7), and March 15, 2010 (Figure 8); however, it is too early in the season to make an accurate prediction of runoff based on snow pack alone.

Plains snow pack in the Oahe reach is characterized as Average. Snow depth in this subbasin is well above average and plains SWE is 2-4 inches according to the NOHRSC snow model (Figure 3).

Plains snow pack in the Fort Randall and Gavins Point subbasins are characterized as Light. In the Fort Randall subbasin, SWE ranges from 0.5-2.0 inches of SWE, while less snow exists in the Gavins Point subbasin (Figure 3).

Plains snow pack in the Sioux City subbasin is characterized as Moderate. NOHRSC snow model estimates (Figure 3) indicate 3-5 inches of SWE in the upper two-thirds of the James River basin and upper half of the Big Sioux River basin, and about 1.5-2.0 inches of SWE in the lower portions of the basin. Cooperative observer measurements verify that 4 inches of SWE exist in the middle and upper James and the upper Big Sioux basins. Similar amounts of SWE were present in the Sioux City subbasin as of January 31, 2010 (Figure 6); however, field verifications in 2010 indicated NOHRSC's modeled estimates were about one inch too high.

Climate Outlook

From February - April, there is a higher probability that temperatures will continue to fall below normal in the Northern Plains and Rocky Mountains with more normal temperatures in Nebraska, Kansas, and Missouri. This should increase the likelihood that the Northern Plains snow pack and mountain snow pack will persist later into spring with limited melting.

With regard to temperatures, there is a higher probability that above normal precipitation will occur in the Northern Rockies and Plains from February - April, with precipitation trending to below normal accumulations in Colorado, Nebraska, Kansas, and western Missouri. The higher probabilities of precipitation in the Northern Rockies and Plains, combined with cooler temperatures indicate snow accumulation trends will continue at their existing above-normal pace, followed by a later season melt.

February 2011 Calendar Year Runoff Forecast

The overall calendar year 2011 runoff forecast is 25.2 MAF (111% of normal) above Gavins Point dam and 28.4 MAF (114% of normal) above Sioux City, IA.

The accumulation of plains snow is above normal in the Northern Plains. In the Fort Peck subbasin, snow accumulation is light; however, in the Fort Peck to Garrison subbasin, the snow accumulation is considered to be moderate in much of the Milk, lower Yellowstone River, Little Missouri, and Missouri River basins. The snow accumulation in the Oahe subbasin is average, while it is light in the Fort Randall and Gavins Point subbasins. The Sioux City reach contains moderate snow accumulations in a majority of its river basins. Mountain snow accumulations as a percent of long-term averages are 112% of normal in the Fort Peck subbasin and 111% of normal in the Fort Peck to Garrison subbasin.

NOAA's Climate Prediction Center outlook indicates higher probabilities of precipitation in the Northern Rockies and Plains. Combined with cooler temperatures through April, snow accumulation trends will continue at their existing above-normal pace.

With regard to March and April runoff, the higher than average snow pack has led us to set the percent of normal runoff above Gavins Point at 132% of normal in March and 135% of normal in April. The May-July runoff above Fort Peck will be 106% of normal while in the Fort Peck to Garrison reach it will be 103% of normal. All runoff is expected to return to normal above Gavins Point by August 2011 with the exception of the Sioux City subbasin. High antecedent moisture conditions, moderate snow pack, and high historic streamflows will continue to produce well-above normal runoff throughout the calendar year.

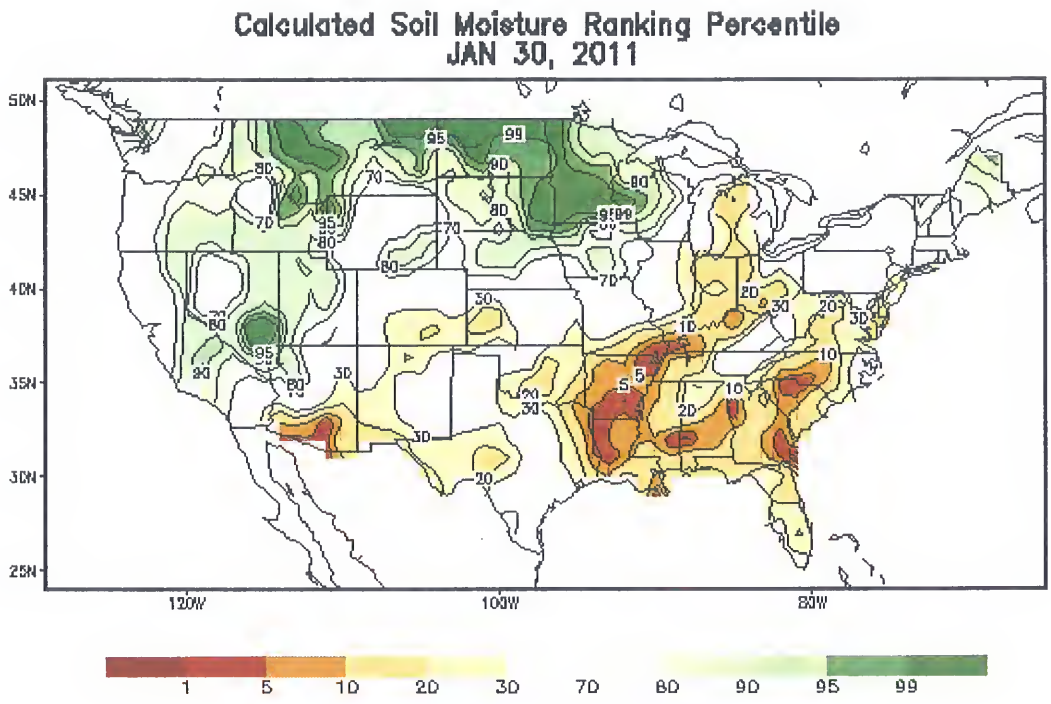

Figure 1 End of January 2011 Soil Moisture Ranking Percentile.

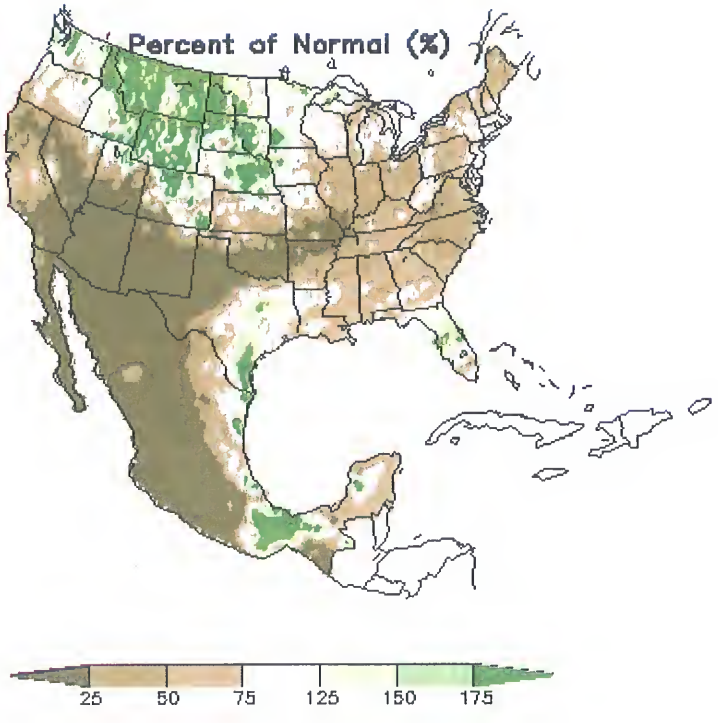

Figure 2 30-day precipitation as a percent of normal, ending January 31, 2011.

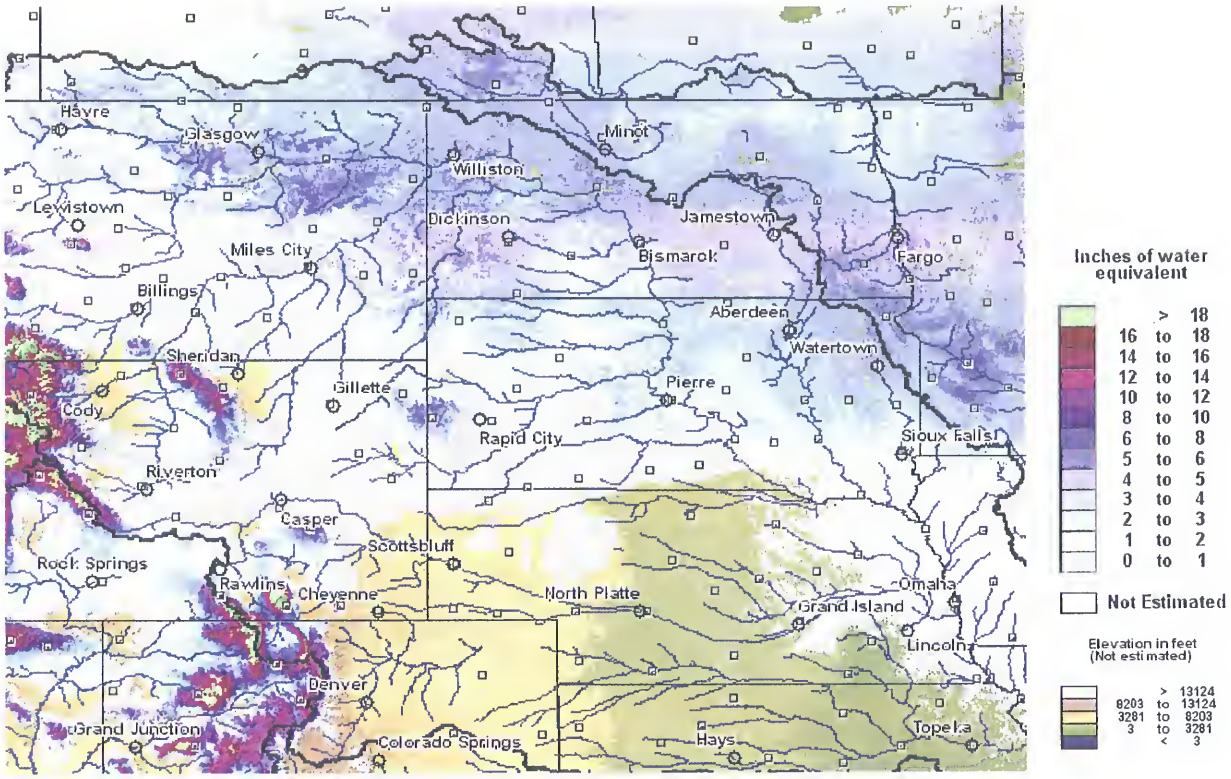

Figure 3 Plains Snow Water Equivalent (SWE) on January 31, 2011.

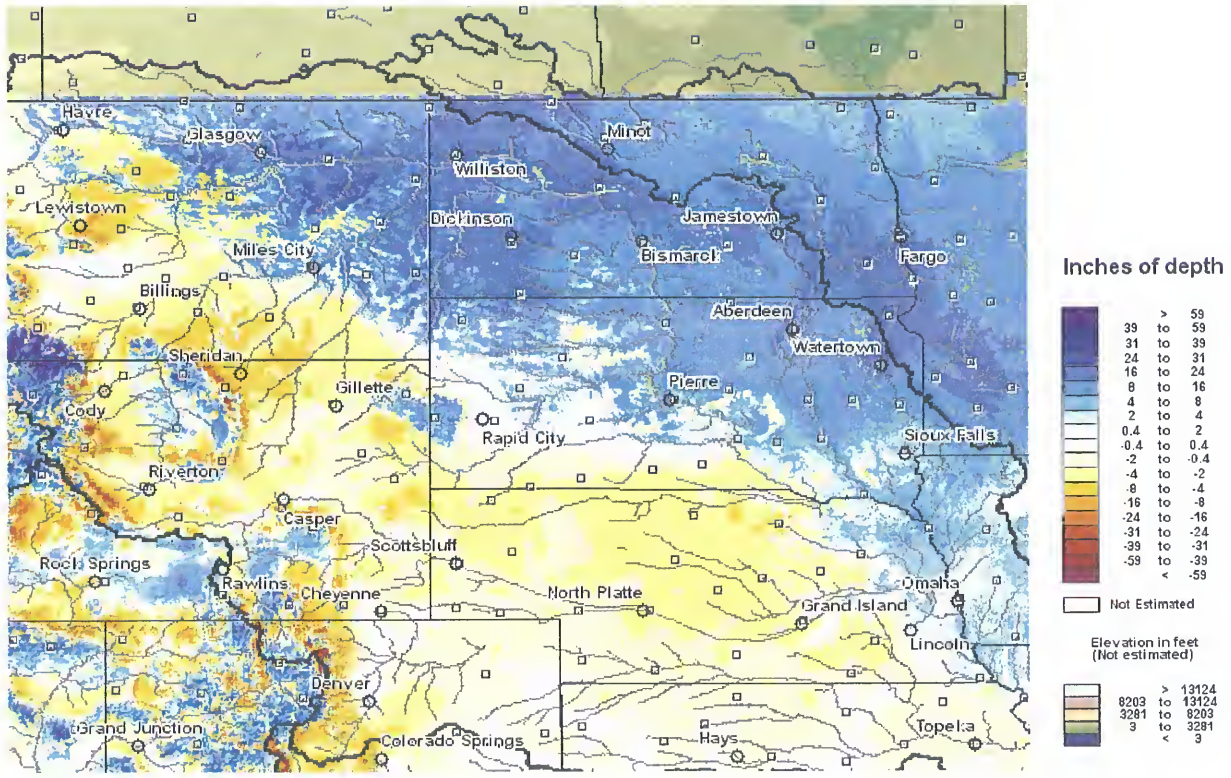

Figure 4 Plains Snow Depth Departure from Normal on January 31, 2011.

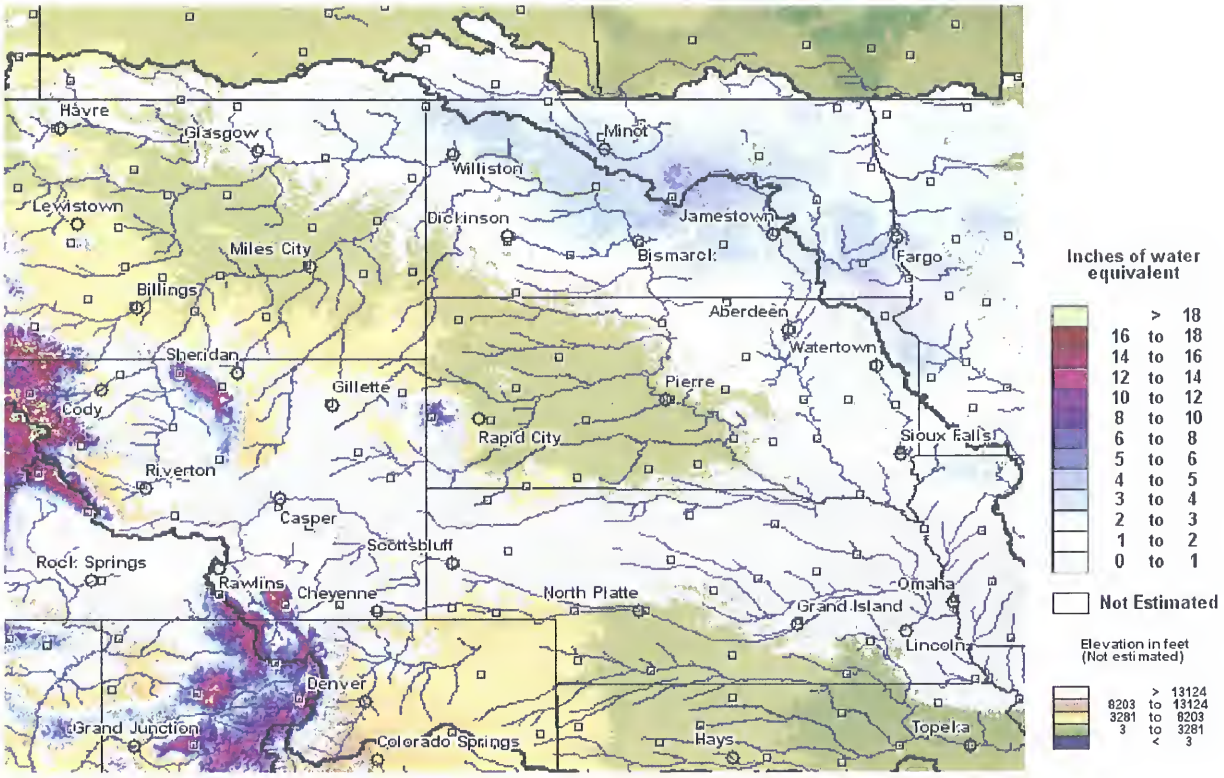

Figure 5 Plains SWE on January 31, 2009.

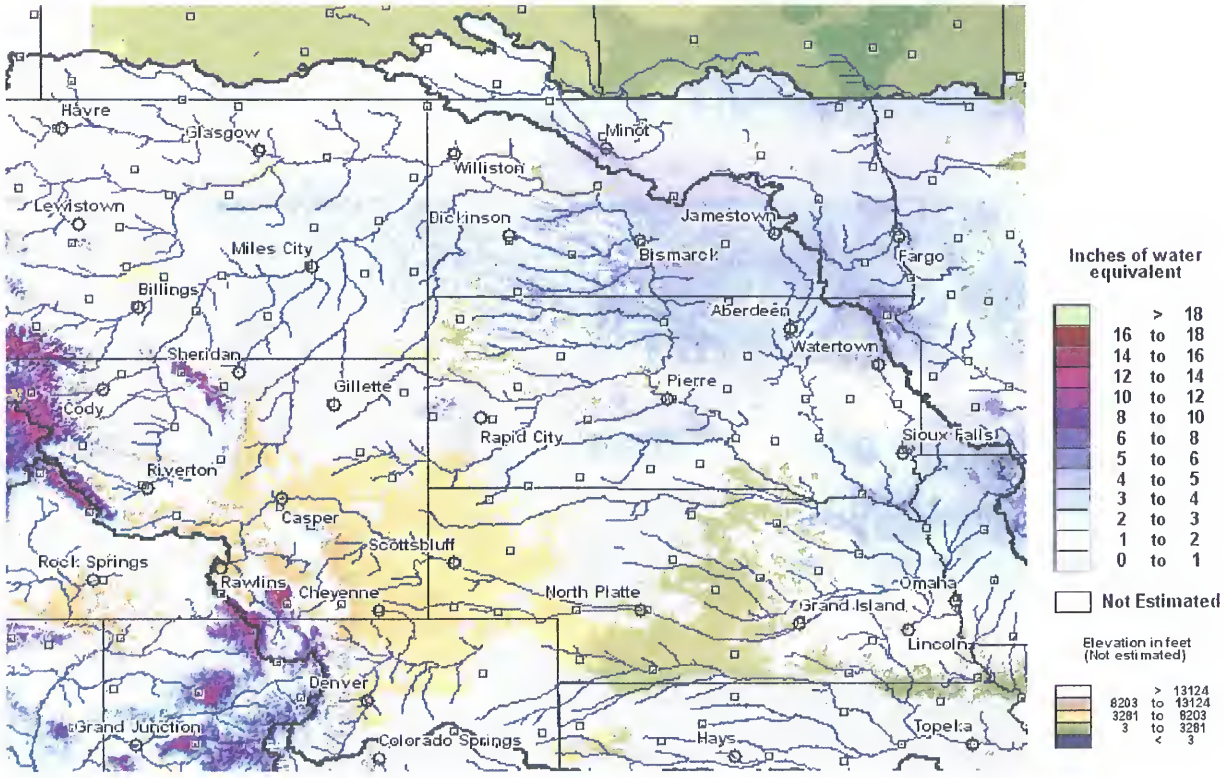

Figure 6 Plains SWE on January 31, 2010.

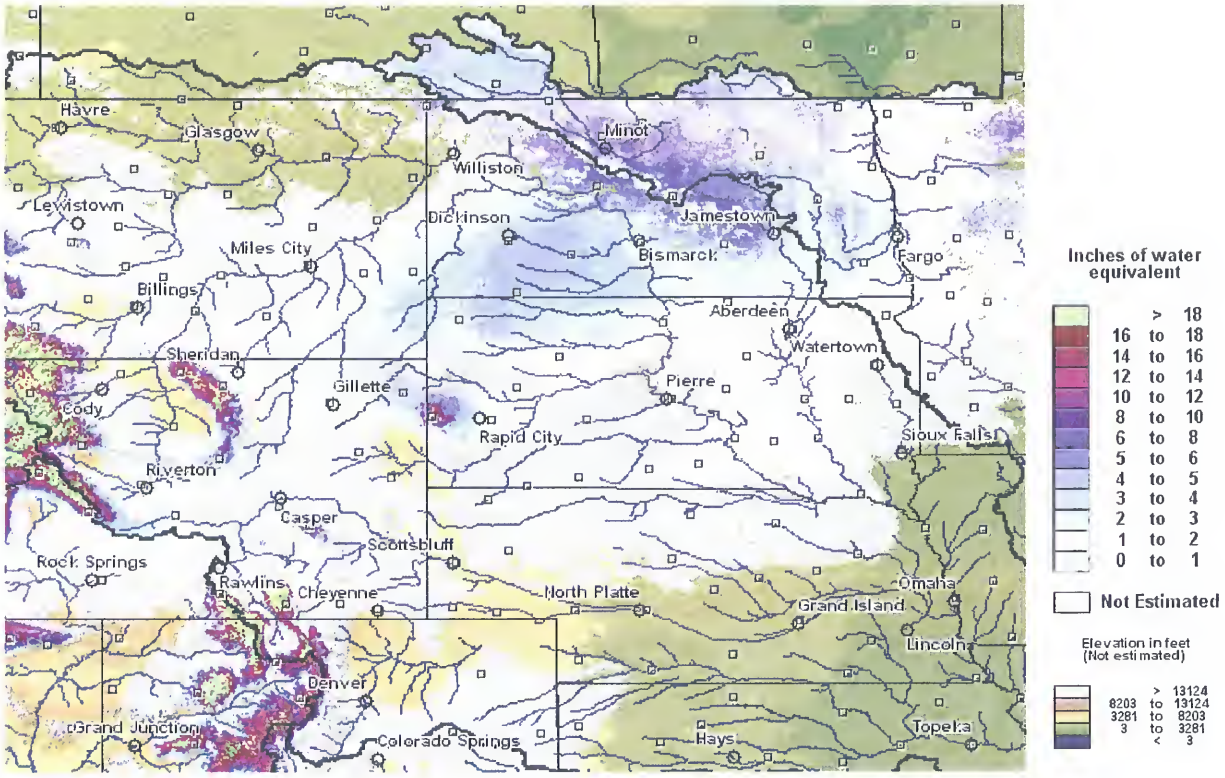

Figure 7 Plains SWE on April 2, 2009.

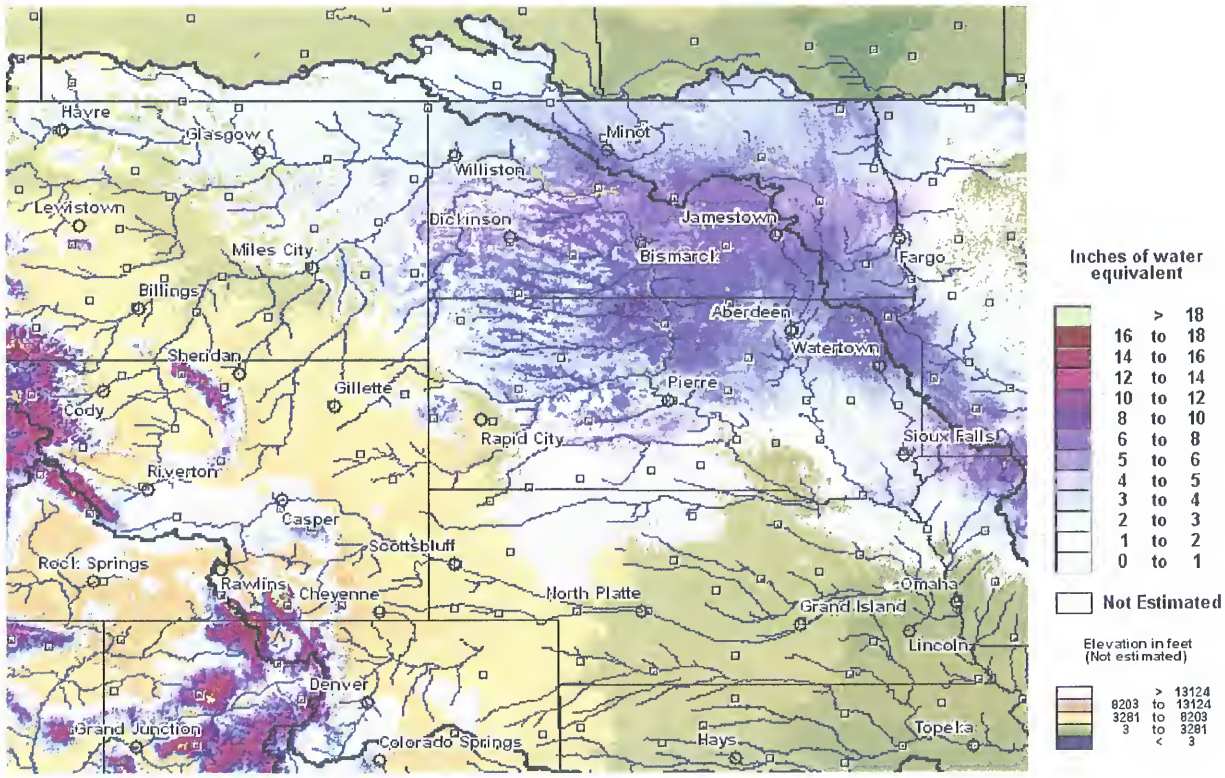

Figure 8 Plains SWE on March 15, 2010.

[redacted] NWO

From: [redacted] NWD02
Sent: Tuesday, February 01, 2011 2:26 PM
To: [redacted] NWD02; [redacted] NWD02
Cc: Farhat, Jody S NWD02
Subject: revised draft monthly forecast (UNCLASSIFIED)
Attachments: Runoff_Forecast_Feb2011_draft.pdf

Classification: UNCLASSIFIED
Caveats: NONE

Here's a revised version of the runoff forecast. I'll send a final after Kevin, Mike, Joel and I discuss it.

[redacted]

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USACE, Northwestern Division
Missouri Basin Water Management Division
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Classification: UNCLASSIFIED
Caveats: NONE

Missouri River Basin
Calendar Year 2011
Forecasted

1-Feb-11

Reach Above	Fort Peck	Garrison	Oahe	Fort Randall	Gavins Point	Sioux City	Summation above Gavins Point	Summation above Sioux City	Accumulated Summation above Sioux City
				Values in 1000 Acre Feet					
	(History)								
JAN 2011	437	309	116	86	67	266	1,015	1,281	1,281
NORMAL	312	261	12	25	100	40	710	750	750
DEPARTURE	125	48	104	61	-33	226	305	531	531
% OF NORM	140%	118%	965%	346%	67%	664%	143%	171%	171%
	(Forecast)								
FEB 2011	350	350	90	49	130	200	969	1,169	2,450
NORMAL	360	356	90	49	130	92	985	1,077	1,827
DEPARTURE	-10	-6	0	0	0	108	-16	92	623
% OF NORM	97%	98%	100%	100%	100%	217%	98%	109%	134%
MAR 2011	619	1,380	866	228	253	594	3,346	3,940	6,390
NORMAL	596	1,003	567	209	206	299	2,581	2,880	4,707
DEPARTURE	23	377	299	19	47	295	765	1,060	1,683
% OF NORM	104%	138%	153%	109%	123%	199%	130%	137%	136%
APR 2011	757	1,380	866	152	207	594	3,362	3,956	10,346
NORMAL	649	1,080	481	144	180	360	2,534	2,894	7,601
DEPARTURE	108	300	385	8	27	234	828	1,062	2,745
% OF NORM	117%	128%	180%	106%	115%	165%	133%	137%	136%
MAY 2011	1,148	1,275	400	147	186	400	3,156	3,556	13,901
NORMAL	1,081	1,245	312	147	186	292	2,971	3,263	10,864
DEPARTURE	67	30	88	0	0	108	185	293	3,037
% OF NORM	106%	102%	128%	100%	100%	137%	106%	109%	128%
JUN 2011	1,720	2,743	470	152	178	350	5,263	5,613	19,514
NORMAL	1,612	2,667	423	152	178	286	5,032	5,318	16,182
DEPARTURE	108	76	47	0	0	64	231	295	3,332
% OF NORM	107%	103%	111%	100%	100%	122%	105%	106%	121%
JUL 2011	871	1,830	190	57	137	250	3,086	3,336	22,850
NORMAL	819	1,776	179	57	137	218	2,968	3,186	19,368
DEPARTURE	52	54	11	0	0	32	118	150	3,482
% OF NORM	106%	103%	106%	100%	100%	115%	104%	105%	118%
AUG 2011	353	604	65	39	115	150	1,176	1,326	24,176
NORMAL	353	604	65	39	115	131	1,176	1,307	20,675
DEPARTURE	0	0	0	0	0	19	0	19	3,501
% OF NORM	100%	100%	100%	100%	100%	115%	100%	101%	117%
SEP 2011	333	452	111	38	111	110	1,045	1,155	25,331
NORMAL	333	452	111	38	111	99	1,045	1,144	21,819
DEPARTURE	0	0	0	0	0	11	0	11	3,512
% OF NORM	100%	100%	100%	100%	100%	111%	100%	101%	116%
OCT 2011	385	523	66	5	120	86	1,099	1,185	26,516
NORMAL	385	523	66	5	120	78	1,099	1,177	22,996
DEPARTURE	0	0	0	0	0	8	0	8	3,520
% OF NORM	100%	100%	100%	100%	100%	110%	100%	101%	115%
NOV 2011	384	398	67	6	118	83	973	1,056	27,572
NORMAL	384	398	67	6	118	76	973	1,049	24,045
DEPARTURE	0	0	0	0	0	7	0	7	3,527
% OF NORM	100%	100%	100%	100%	100%	109%	100%	101%	115%
DEC 2011	329	247	0	12	100	56	688	744	28,316
NORMAL	329	247	0	12	100	52	688	740	24,785
DEPARTURE	0	0	0	0	0	4	0	4	3,531
% OF NORM	100%	100%	100%	100%	100%	108%	100%	101%	114%
				Calendar Year Totals					
	7,686	11,491	3,308	971	1,722	3,139	25,178	28,316	
NORMAL	7,213	10,612	2,373	883	1,681	2,023	22,762	24,785	
DEPARTURE	473	879	934	88	41	1,116	2,415	3,531	
% OF NORM	107%	108%	139%	110%	102%	155%	111%	114%	

[redacted] NWO

From: [redacted] NWD02
Sent: Tuesday, February 01, 2011 12:33 PM
To: Farhat, Jody S NWD02
Cc: [redacted] NWD02
Subject: Feburary 2011 Runoff Forecast (UNCLASSIFIED)
Attachments: Runoff_Forecast_Feb2011.pdf; 2011Feb.docx

Classification: UNCLASSIFIED
Caveats: NONE

Jody,

Please have a look at the runoff forecast, and we can discuss it later today.

The overall calendar year 2011 runoff forecast is 25.8 MAF (113% of normal) above Gavins Point dam and 30.2 MAF (122% of normal) above Sioux City, IA.

The accumulation of plains snow is above normal in the Northern Plains. In the Fort Peck subbasin, snow accumulation is light; however, in the Fort Peck to Garrison subbasin, the snow accumulation is considered in much of the Milk, lower Yellowstone River, Little Missouri, and Missouri River basins. The snow accumulation in the Oahe subbasin is average, while it is light in the Fort Randall and Gavins Point subbasins. The Sioux City reach contains moderate snow accumulations in a majority of its river basins. Mountain snow accumulations as a percent of long-term averages are 112% of normal in the Fort Peck subbasin and 111% of normal in the Fort Peck to Garrison subbasin.

NOAA's Climate Prediction Center outlook indicates higher probabilities of precipitation in the Northern Rockies and Plains. Combined with cooler temperatures through April, snow accumulation trends will continue at their existing above-normal pace.

With regard to March and April runoff, the higher than average snow pack has led us to set the percent of normal runoff above Gavins Point at 135% of normal in March and 138% of normal in April. The May-July runoff above Fort Peck will be 106% of normal while in the Fort Peck to Garrison reach it will be 108% of normal. All runoff is expected to return to normal above Gavins Point by August 2011 with the exception of the Sioux City subbasin. High antecedent moisture conditions, moderate snow pack, and high historic streamflows will continue to produce well-above normal runoff throughout the calendar year.

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Classification: UNCLASSIFIED
Caveats: NONE

Missouri River Basin
Calendar Year 2011
Forecasted

1-Feb-11

Reach Above	Fort Peck	Garrison	Oahe	Fort Randall	Gavins Point	Sioux City	Summation above Gavins Point	Summation above Sioux City	Accumulated Summation above Sioux City
				Values in 1000 Acre Feet					
	(History)								
JAN 2011	437	309	116	86	67	266	1,015	1,281	1,281
NORMAL	312	261	12	25	100	40	710	750	750
DEPARTURE	125	48	104	61	-33	226	305	531	531
% OF NORM	140%	118%	965%	346%	67%	664%	143%	171%	171%
	(Forecast)								
FEB 2011	400	370	95	50	100	200	1,015	1,215	2,496
NORMAL	360	356	90	49	130	92	985	1,077	1,827
DEPARTURE	40	14	5	1	-30	108	30	138	669
% OF NORM	111%	104%	106%	102%	77%	217%	103%	113%	137%
MAR 2011	619	1,518	866	228	253	941	3,484	4,425	6,920
NORMAL	596	1,003	567	209	206	299	2,581	2,880	4,707
DEPARTURE	23	515	299	19	47	642	903	1,545	2,213
% OF NORM	104%	151%	153%	109%	123%	315%	135%	154%	147%
APR 2011	757	1,518	866	152	207	941	3,500	4,440	11,361
NORMAL	649	1,080	481	144	180	360	2,534	2,894	7,601
DEPARTURE	108	438	385	8	27	581	966	1,546	3,760
% OF NORM	117%	141%	180%	106%	115%	261%	138%	153%	149%
MAY 2011	1,148	1,339	400	147	186	600	3,220	3,820	15,181
NORMAL	1,081	1,245	312	147	186	292	2,971	3,263	10,864
DEPARTURE	67	94	88	0	0	308	249	557	4,317
% OF NORM	106%	108%	128%	100%	100%	205%	108%	117%	140%
JUN 2011	1,720	2,880	470	152	178	500	5,400	5,900	21,080
NORMAL	1,612	2,667	423	152	178	286	5,032	5,318	16,182
DEPARTURE	108	213	47	0	0	214	368	582	4,898
% OF NORM	107%	108%	111%	100%	100%	175%	107%	111%	130%
JUL 2011	871	1,922	190	57	137	375	3,177	3,552	24,633
NORMAL	819	1,776	179	57	137	218	2,968	3,186	19,368
DEPARTURE	52	146	11	0	0	157	209	366	5,265
% OF NORM	106%	108%	106%	100%	100%	172%	107%	111%	127%
AUG 2011	353	604	65	39	115	220	1,176	1,396	26,029
NORMAL	353	604	65	39	115	131	1,176	1,307	20,675
DEPARTURE	0	0	0	0	0	89	0	89	5,354
% OF NORM	100%	100%	100%	100%	100%	168%	100%	107%	126%
SEP 2011	333	452	111	38	111	160	1,045	1,205	27,234
NORMAL	333	452	111	38	111	99	1,045	1,144	21,819
DEPARTURE	0	0	0	0	0	61	0	61	5,415
% OF NORM	100%	100%	100%	100%	100%	162%	100%	105%	125%
OCT 2011	385	523	66	5	120	86	1,099	1,185	28,419
NORMAL	385	523	66	5	120	78	1,099	1,177	22,996
DEPARTURE	0	0	0	0	0	8	0	8	5,423
% OF NORM	100%	100%	100%	100%	100%	110%	100%	101%	124%
NOV 2011	384	398	67	6	118	83	973	1,056	29,475
NORMAL	384	398	67	6	118	76	973	1,049	24,045
DEPARTURE	0	0	0	0	0	7	0	7	5,430
% OF NORM	100%	100%	100%	100%	100%	109%	100%	101%	123%
DEC 2011	329	247	0	12	100	56	688	744	30,219
NORMAL	329	247	0	12	100	52	688	740	24,785
DEPARTURE	0	0	0	0	0	4	0	4	5,434
% OF NORM	100%	100%	100%	100%	100%	108%	100%	101%	122%
				Calendar Year Totals					
	7,736	12,080	3,313	972	1,692	4,427	25,792	30,219	
NORMAL	7,213	10,612	2,373	883	1,681	2,023	22,762	24,785	
DEPARTURE	523	1,468	939	89	11	2,404	3,030	5,434	
% OF NORM	107%	114%	140%	110%	101%	219%	113%	122%	

February 2011 Calendar Year Runoff Forecast

2011 January Runoff

January 2011 runoff above Sioux City, IA, was 170.8% of normal at 1280.8 KAF. Fort Peck received 437.4 KAF (140%), Garrison received 308.5 KAF (118%), Oahe received 115.8 KAF (965%), Fort Randall received 86.4 KAF (346%), Gavins Point received 67 KAF (67%), and the Sioux City reach received 266 KAF (664%).

Antecedent Moisture & Precipitation

Soil moisture conditions on January 30, 2011 continue to rank very high in the Northern Plains including eastern Montana and the Dakotas, and the Northern Rockies in Montana and northwest Wyoming. Soil moisture conditions rank in at least the 70th percentile, with particularly wet areas ranking 90 percent or higher. The Upper Missouri basin in the Northern Rockies, northeast Montana, northern North Dakota, and eastern South Dakota all rank in the 99th percentile for soil moisture. Wetter than normal conditions also exist in southeast Wyoming, much of Nebraska and Iowa.

Precipitation during the month of January was well-above normal throughout most of the Missouri River basin. Greater than 175% of normal occurred throughout much of the basin upstream of Rulo, NE. As a result, Northern Plains and Northern Rockies snow accumulations benefitted greatly.

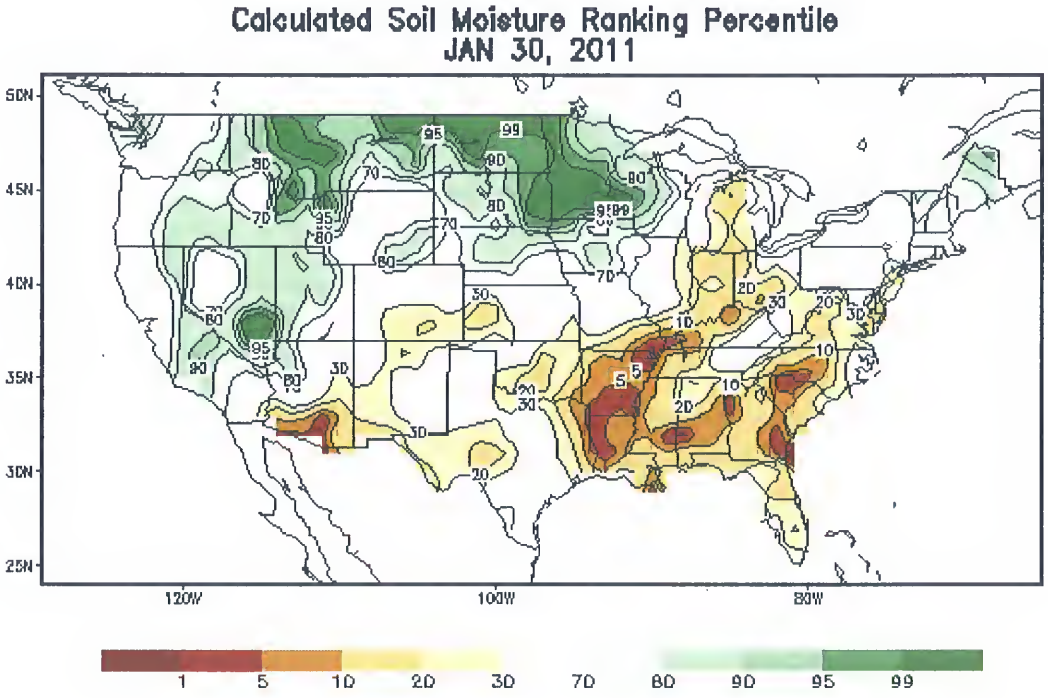


Figure 1 End of January 2011 Soil Moisture Ranking Percentile.

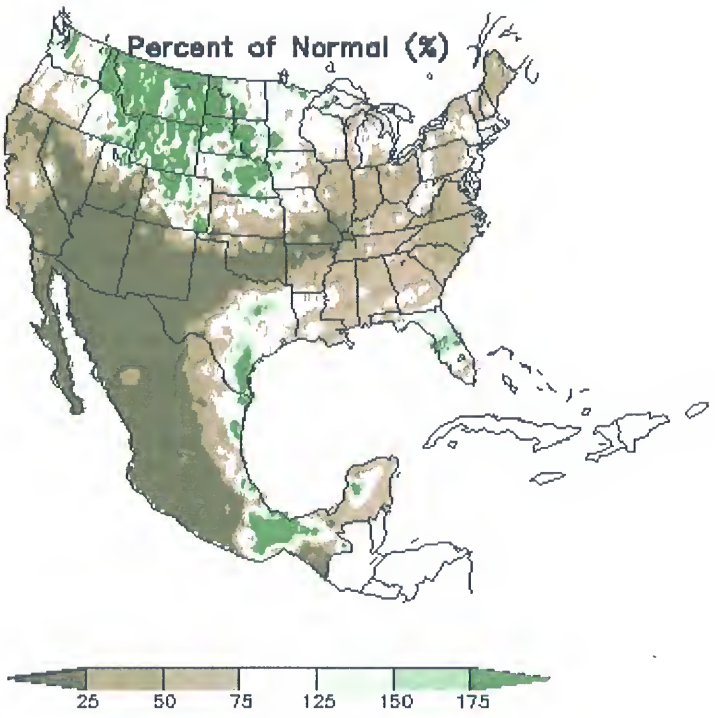


Figure 2. 30-day precipitation as a percent of normal, ending January 31, 2011.

Mountain Snow Pack

Mountain snowpack as of January 31, 2011 was 112% of normal above Fort Peck and 111% of normal in the Fort Peck to Garrison reach. Missouri River Basin mountain snowpack normally peaks near on April 15. By January 1, normally 61% of the peak accumulation has occurred.

Plains Snow Pack

Plains snow pack in the Fort Peck subbasin is characterized as Light to Average while in the Fort Peck to Garrison reach it is characterized as Moderate compared to all runoff years in which snow accumulation influenced March-April runoff. According to NOAA's NOHRSC, about 1-3 inches of SWE are present in the Fort Peck subbasin, while 3-5 inches cover much of the Fort Peck to Garrison subbasin, especially in the Milk River basin and the Yellowstone River basin downstream of Miles City, MT, and the lower half of the Little Missouri basin. It is not uncommon for the NOHRSC model to estimate 5-6 inches of SWE on the plains in the lower Milk River basin and along the Missouri River and its tributaries between Fort Peck Dam and Williston, ND. SWE measurements by the NWS in northeast Montana ranged from 3.0 to 6.5 inches. Snow pack in the Fort Peck to Garrison reach on January 31, 2011, is greater than the snow pack that existed on January 31 in 2009 and 2010. It is similar to the peak amount that occurred on March 15, 2010, and much great than the peak in 2009.

Plains snow pack in the Oahe reach is characterized as Average. Snow depth in this subbasin is well above average and plains SWE is 2-4 inches according to the NOHRSC snow model.

Plains snow pack in the Fort Randall and Gavins Point subbasins are characterized as Light. In the Fort Randall subbasin, SWE ranges from 0.5-2.0 inches of SWE, while less snow exists in the Gavins Point subbasin.

Plains snow pack in the Sioux City subbasin is characterized as Moderate. NOHRSC snow model estimates indicate 3-5 inches of SWE in the upper two-thirds of the James River basin and upper half of the Big Sioux River basin, and about 1.5-2.0 inches of SWE in the lower portions of the basin. Cooperative observer measurements verify that 4 inches of SWE exist in the middle and upper James and the upper Big Sioux basins. Similar amounts of SWE were present in the Sioux City subbasin at this time in 2010; however, the estimated peak SWE on March 15, 2010, was 1.5-2.0 inches higher according to NOHRSC. Field verifications indicated NOHRSC's modeled estimates were too high.

Climate Outlook

From February - April, there is a higher probability that temperatures will continue to fall below normal in the Northern Plains and Rockies with more normal temperatures in Nebraska, Kansas, and Missouri. This should increase the likelihood that the Northern Plains snow pack and mountain snow pack will persist later into spring with limited melting.

With regard to temperatures, there is a higher probability that above normal precipitation will occur in the Northern Rockies and Plains from February - April, with precipitation trending to below normal accumulations in Colorado, Nebraska, Kansas, and western Missouri. The higher probabilities of precipitation in the Northern Rockies and Plains, combined with cooler temperatures indicate snow accumulation trends will continue at their existing above-normal pace, followed by a later season melt.

February 2011 Calendar Year Runoff Forecast

The overall calendar year 2011 runoff forecast is 25.8 MAF (113% of normal) above Gavins Point dam and 30.2 MAF (122% of normal) above Sioux City, IA.

The accumulation of plains snow is above normal in the Northern Plains. In the Fort Peck subbasin, snow accumulation is light; however, in the Fort Peck to Garrison subbasin, the snow accumulation is considered in much of the Milk, lower Yellowstone River, Little Missouri, and Missouri River basins. The snow accumulation in the Oahe subbasin is average, while it is light in the Fort Randall and Gavins Point subbasins. The Sioux City reach contains moderate snow accumulations in a majority of its river basins. Mountain snow accumulations as a percent of long-term averages are 112% of normal in the Fort Peck subbasin and 111% of normal in the Fort Peck to Garrison subbasin.

NOAA's Climate Prediction Center outlook indicates higher probabilities of precipitation in the Northern Rockies and Plains. Combined with cooler temperatures through April, snow accumulation trends will continue at their existing above-normal pace.

With regard to March and April runoff, the higher than average snow pack has led us to set the percent of normal runoff above Gavins Point at 135% of normal in March and 138% of normal in April. The May-July runoff above Fort Peck will be 106% of normal while in the Fort Peck to Garrison reach it will be 108% of normal. All runoff is expected to return to normal above Gavins Point by August 2011 with the exception of the Sioux City subbasin. High antecedent moisture conditions, moderate snow pack, and high historic streamflows will continue to produce well-above normal runoff throughout the calendar year.

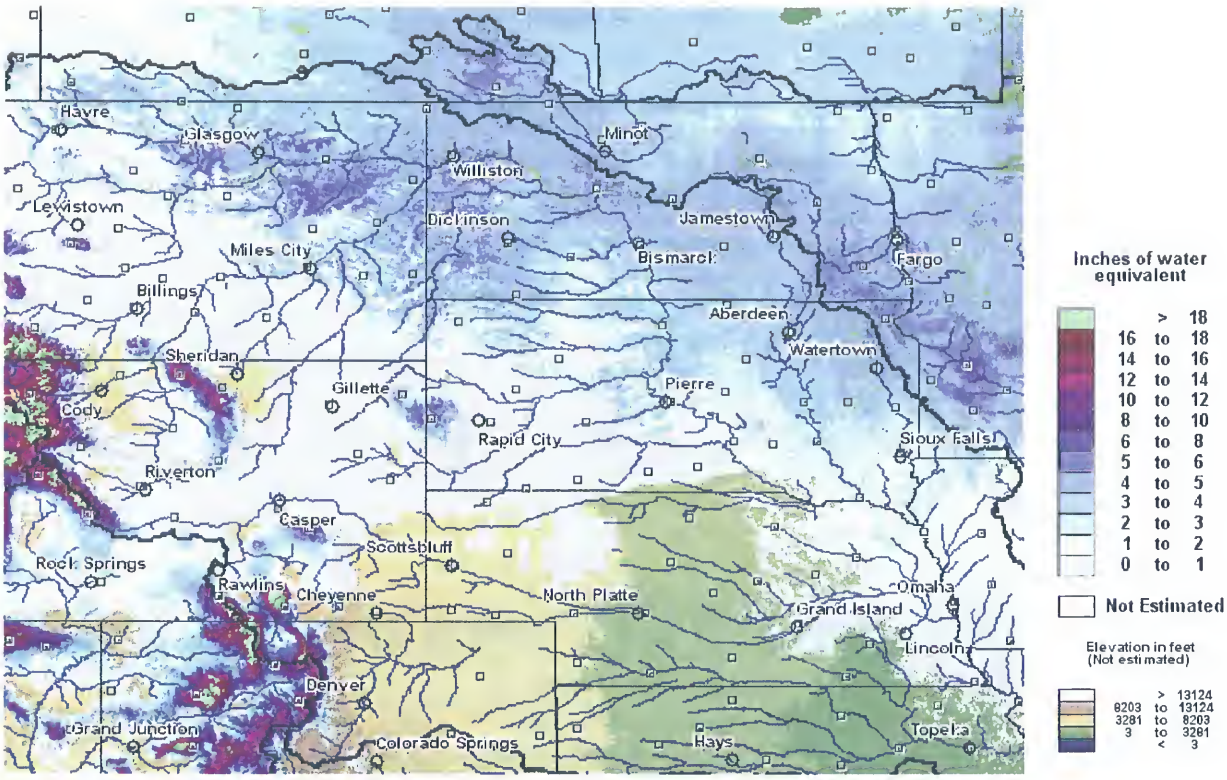


Figure 3 Plains Snow Water Equivalent (SWE) on January 31, 2011.

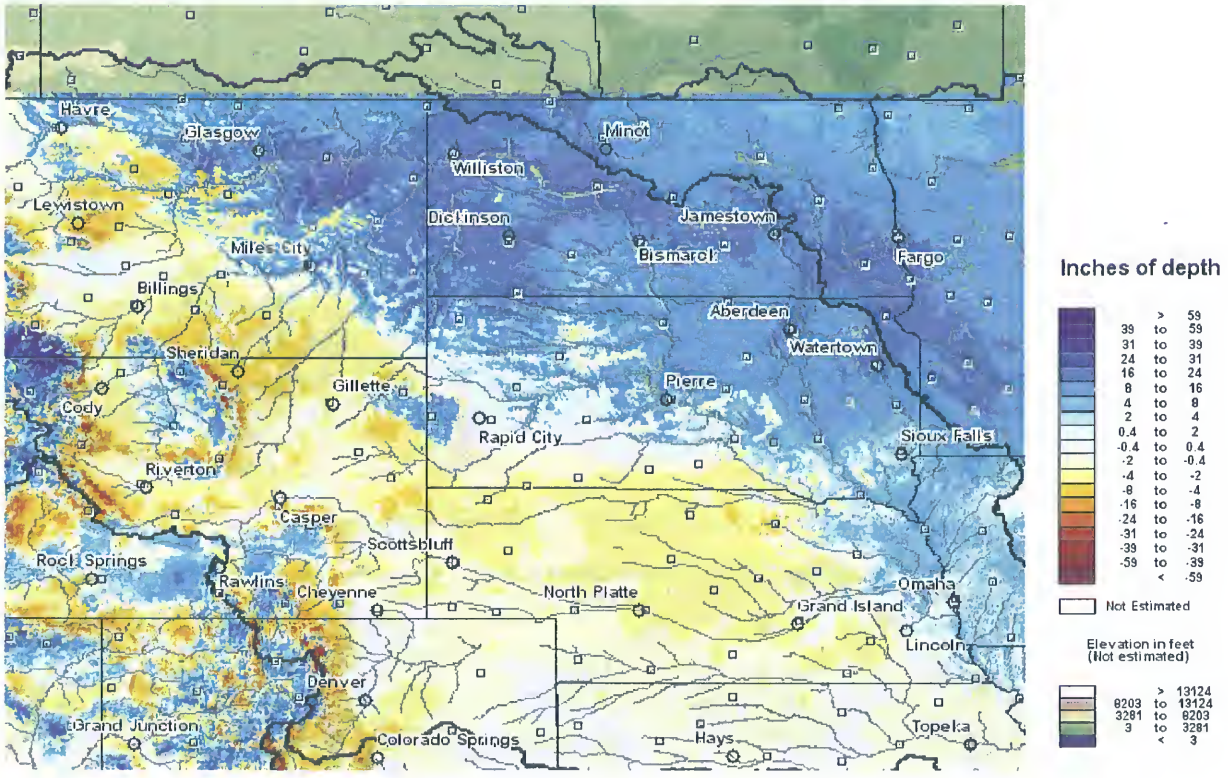


Figure 4 Plains Snow Depth Departure from Normal on January 31, 2011.

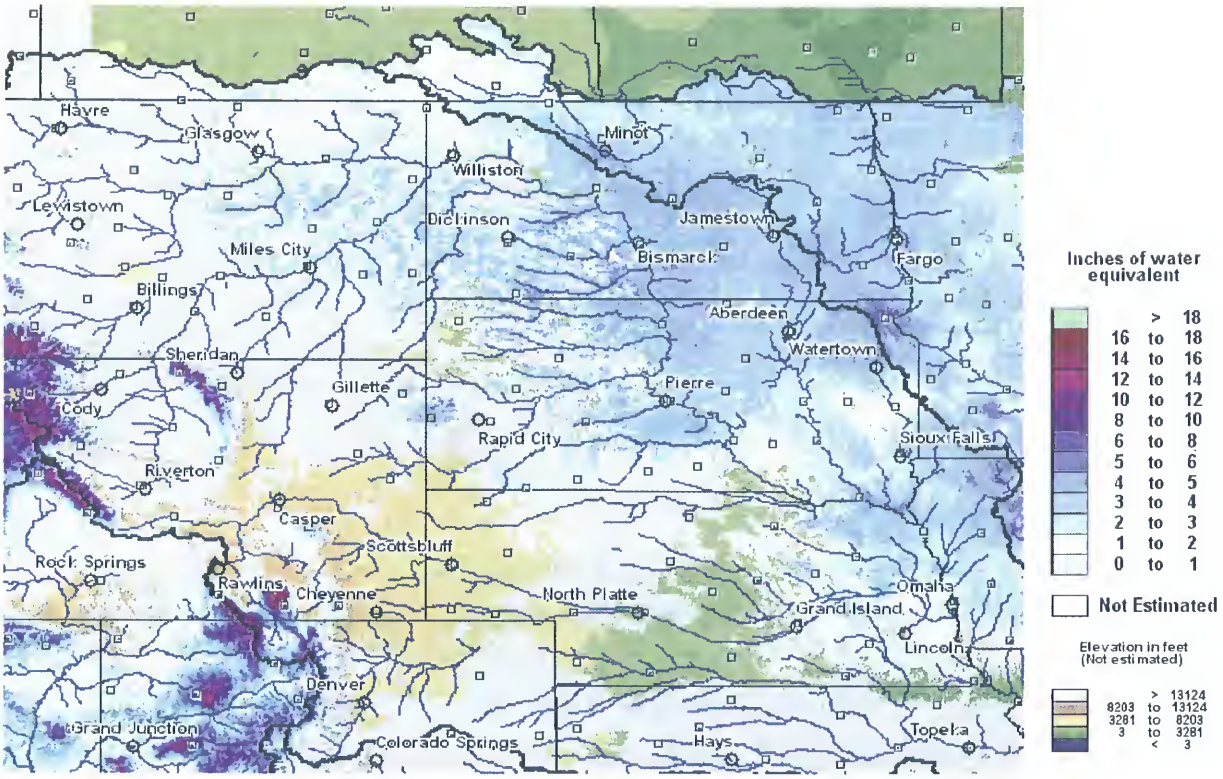


Figure 5. Plains SWE on January 31, 2010.

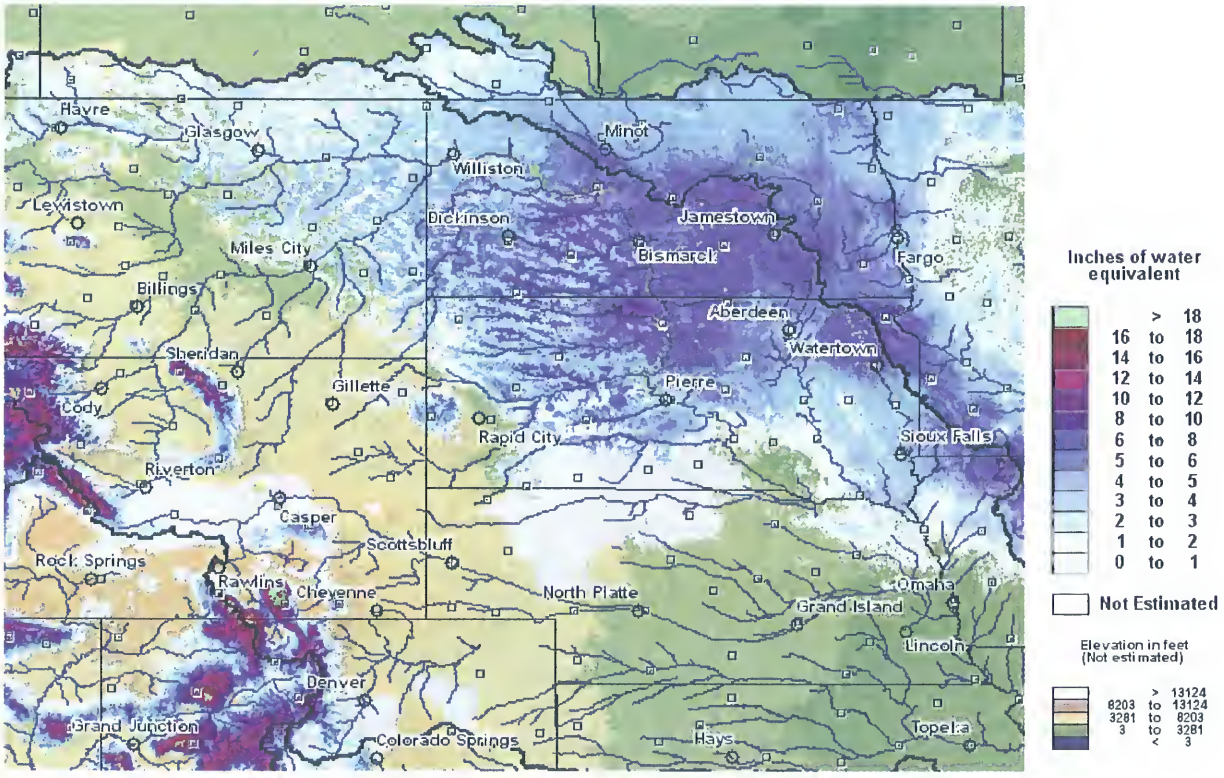


Figure 6. Plains SWE on March 15, 2010.

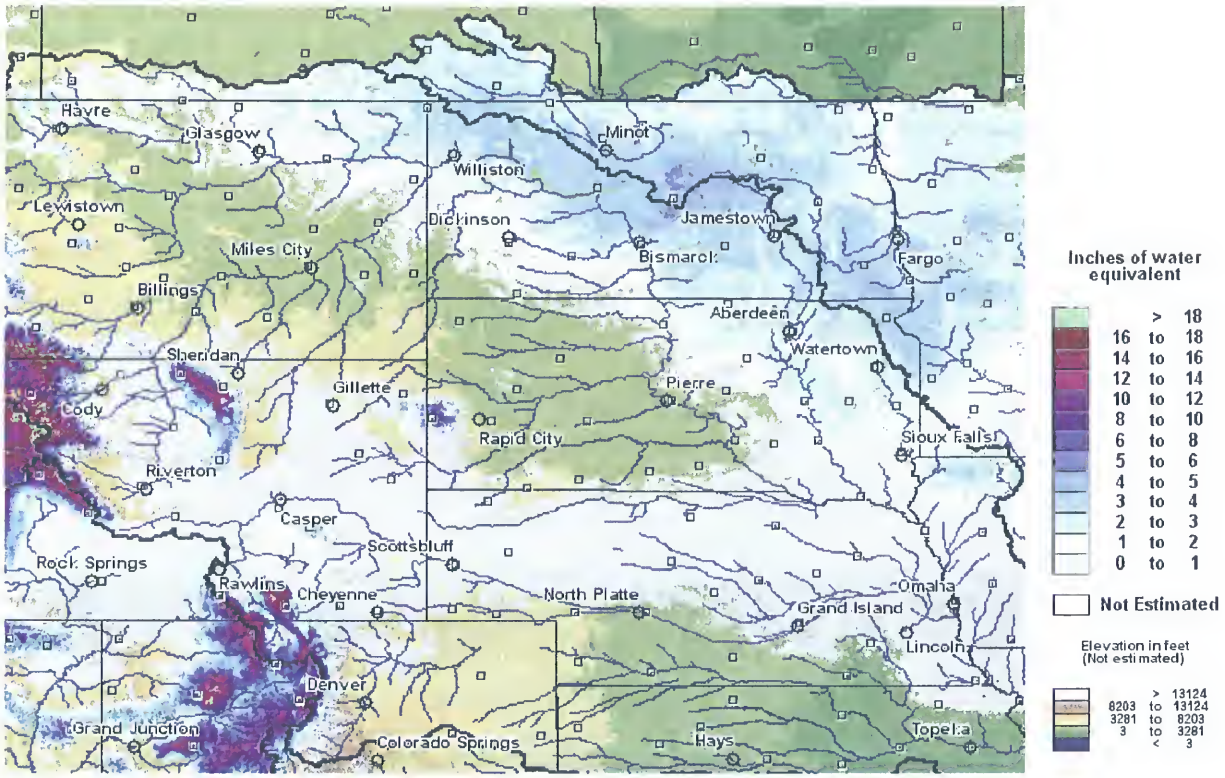


Figure 7. Plains SWE on January 31, 2009.

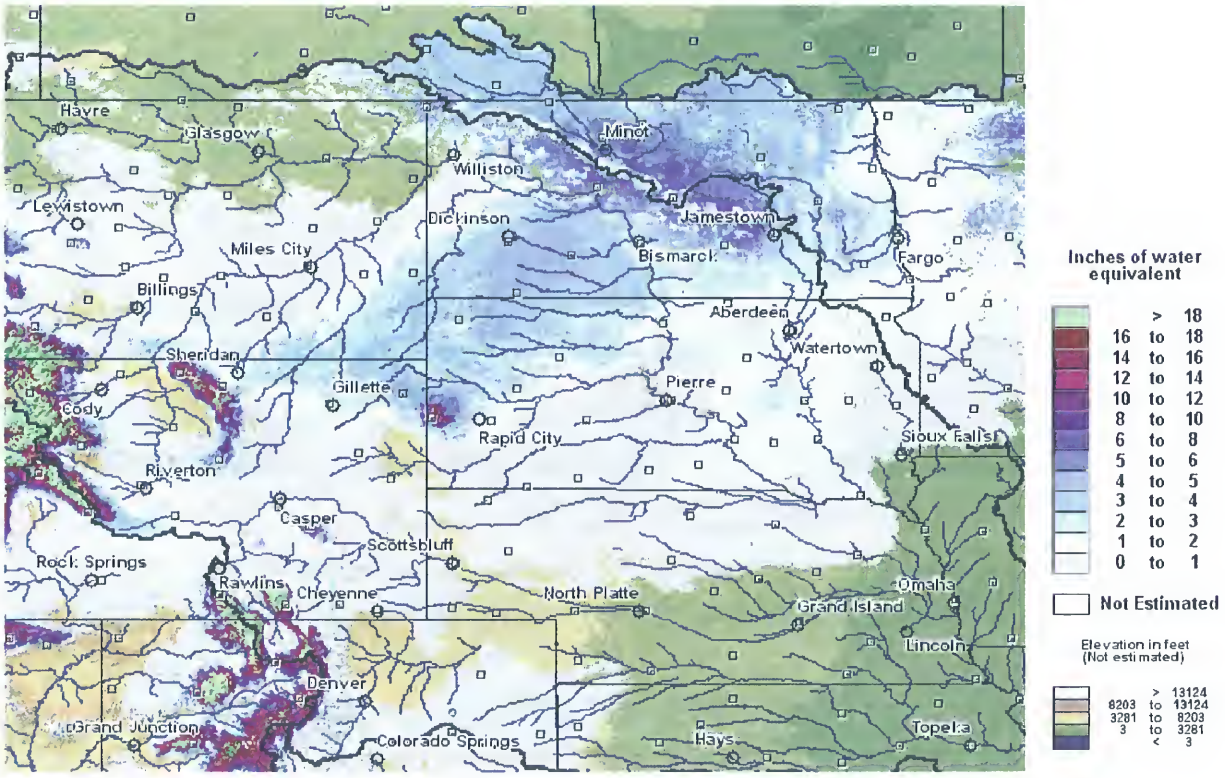


Figure 8. Plains SWE on April 2, 2009.

[redacted] NWO

From: [redacted] NWD02
Sent: Wednesday, February 02, 2011 4:07 PM
To: Farhat, Jody S NWD02; [redacted] NWD02; 'kinney@wapa.gov'; 'bcallies@wapa.gov'; [redacted] NWD02; [redacted] NWD02; [redacted] NWO; 'shimek@wapa.gov'
Subject: February 2011 Reservoir Regulation Studies Graphics and Statistics (UNCLASSIFIED)
Attachments: WAPAMNTH-11-FEB.xlsx; resfcastfeb.pdf; WAPA.MonthlyStudies.Graphic.FEB.2011.pptx

Classification: UNCLASSIFIED
Caveats: NONE

Everyone,

Here are the January 2011 study graphics and statistics.

If you have any questions please contact me.

Thanks,

[redacted]
Hydraulic Engineer
Missouri River Basin Water Management Division
[redacted]

Classification: UNCLASSIFIED
Caveats: NONE

Gavins Point Dam Release

(million acre-feet)

	MAX 67-10	MIN 67-10	MEAN 67-10	LAST YEAR	Jan-11 FCST	Jan-11 LD fcst	Jan-11 UD fcst	Feb-11 FCST	Feb-11 LD fcst	Feb-11 UD fcst	
JAN	1.553	0.702	1.051	0.978	1.138	1.045	1.291	1.139	1.139	1.139	* JAN
FEB	1.685	0.549	0.966	0.834	1.111	0.994	1.277	1.166	0.944	1.333	FEB
MAR	2.191	0.623	1.206	0.922	1.389	1.313	1.389	1.389	1.313	1.389	MAR
APR	2.993	0.605	1.477	0.912	1.598	1.773	1.904	1.589	1.773	1.904	APR
MAY	3.664	0.651	1.730	1.550	1.888	2.084	2.890	1.888	2.084	2.890	MAY
JUN	3.569	0.715	1.771	1.649	1.880	2.041	3.094	1.880	2.041	3.094	JUN
JUL	3.782	0.495	1.983	2.152	1.943	2.109	3.443	1.943	2.109	3.474	JUL
AUG	3.959	0.661	2.129	2.581	2.041	2.091	3.443	2.041	2.091	3.474	AUG
SEP	3.894	1.102	2.112	2.805	2.083	1.993	3.332	2.112	1.993	3.362	SEP
OCT	4.197	0.760	2.106	3.000	2.152	2.035	3.443	2.183	2.035	3.474	OCT
NOV	4.165	0.448	1.834	2.749	2.082	1.674	3.333	2.112	1.674	3.362	NOV
DEC	2.287	0.759	1.154	1.549	1.383	0.769	1.722	1.383	0.769	1.722	DEC
TOTAL		8.070		21.681	20.69	19.92	30.56	20.83	19.97	30.62	TOTAL
JAN 12					1.230	0.769	1.476	1.230	0.769	1.476	JAN 12
FEB 12					1.150	0.719	1.343	1.150	0.719	1.381	FEB 12

* Actual

* Actual ** New Minimum

MAINSTEM ENERGY

(GWh)

	MAX 67-10	MEAN 67-10	MIN 67-10	AVG 100-YR	LAST YEAR	Jan-11 FCST	Feb-11 FCST	
JAN	915	710	425	729	558	729	745 *	JAN
FEB	912	622	307	637	442	700	726	FEB
MAR	1,040	637	308	554	352	692	691	MAR
APR	1,252	681	251	711	384	751	751	APR
MAY	1,344	779	285	928	664	962	953	MAY
JUN	1,386	834	286	912	626	988	980	JUN
JUL	1,484	944	289	1,023	816	1070	1062	JUL
AUG	1,520	1,000	365	1,053	970	1114	1106	AUG
SEP	1,464	891	393	973	1094	999	1006	SEP
OCT	1,492	810	310	928	1081	826	837	OCT
NOV	1,425	734	244	857	1001	820	830	NOV
DEC	1,035	694	419	722	738	759	754	DEC
TOTAL		9,336		10,027	8,726	10,410	10,441	TOTAL
JAN 12						816	811	JAN 12
FEB 12						746	742	FEB 12

* Actual

** New Minimum

MAINSTEM ENERGY

(GWh)

	Lower Basic FCST Jan-11	Upper Basic FCST Jan-11	Lower Basic FCST Feb-11		Upper Basic FCST Feb-11		
JAN	699	775	745	*	745	*	JAN
FEB	642	748	646		777		FEB
MAR	694	666	694		665		MAR
APR	807	871	794		871		APR
MAY	988	1369	989		1373		MAY
JUN	988	1386	990		1388		JUN
JUL	1049	1542	1050		1551		JUL
AUG	1036	1549	1038		1557		AUG
SEP	904	1465	905		1472		SEP
OCT	756	1407	757		1414		OCT
NOV	649	1354	650		1361		NOV
DEC	533	885	534		885		DEC
TOTAL	9745	14017	9,792		14,059		TOTAL
JAN 12	632	942	629		942		JAN 12
FEB 12	575	861	572		861		FEB 12

* Actual

* Actual ** New Minimum

FEB 1, 2011 - BASIC CONDITION
END OF FEB 2011 - UNBAL FP +0.8 GA +0.8 OA -1.3
Elevations & Storages are for Date Shown
Avg Discharge & Energy are Monthly Values
Date of Study: February 1, 2011

	31-Jan-11	28-Feb
FORT PECK -------		
ELEV FTMSL	2235.3	2234.8
DISCH KCFS	8.9	10.0
GARRISON --------		
ELEV FTMSL	1839.9	1838.3
DISCH KCFS	23.6	26.0
OAHE ------------		
ELEV FTMSL	1605.4	1606.2
DISCH KCFS	22.5	22.3
BIG BEND --------		
ELEV FTMSL	1421.1	1420.0
DISCH KCFS	19.7	23.4
FORT RANDALL ----		
ELEV FTMSL	1345.8	1350.0
DISCH KCFS	17.3	18.6
GAVINS POINT ----		
ELEV FTMSL	1207.2	1206.0
DISCH KCFS	18.5	21.0
SYSTEM ----------		
STORAGE 1000 AF	56983	56829
ENERGY GWh	726	726
PEAK POWER MW		2317

FEB 1, 2011 - LOWER BASIC
END OF FEB 2011 - UNBAL FP +0.5 GA +0.4 OA -0.7

	31-Jan-11	28-Feb
FORT PECK -------		
ELEV FTMSL	2235.3	2234.5
DISCH KCFS	8.9	9.0
GARRISON --------		
ELEV FTMSL	1839.9	1837.9
DISCH KCFS	23.6	26.0
OAHE ------------		
ELEV FTMSL	1605.4	1606.8
DISCH KCFS	22.5	18.7
BIG BEND --------		
ELEV FTMSL	1421.1	1420.0
DISCH KCFS	19.7	19.8
FORT RANDALL ----		
ELEV FTMSL	1345.8	1350.0
DISCH KCFS	17.3	14.8
GAVINS POINT ----		
ELEV FTMSL	1207.2	1206.0
DISCH KCFS	18.5	17.0
SYSTEM ----------		
STORAGE 1000 AF	56983	56819
ENERGY GWh	646	646
PEAK POWER MW		2318

FEB 1, 2011 - UPPER BASIC
END OF FEB 2011 - UNBAL FP +1.0 GA +1.0 OA -1.7

	31-Jan-11	28-Feb
FORT PECK -------		
ELEV FTMSL	2235.3	2235.0
DISCH KCFS	8.9	10.0
GARRISON --------		
ELEV FTMSL	1839.9	1838.5
DISCH KCFS	23.6	26.0
OAHE ------------		
ELEV FTMSL	1605.4	1605.8
DISCH KCFS	22.5	24.8
BIG BEND --------		
ELEV FTMSL	1421.1	1420.0
DISCH KCFS	19.7	26.0
FORT RANDALL ----		
ELEV FTMSL	1345.8	1350.0
DISCH KCFS	17.3	21.3
GAVINS POINT ----		
ELEV FTMSL	1207.2	1206.0
DISCH KCFS	18.5	24.0
SYSTEM ----------		
STORAGE 1000 AF	56983	56822
ENERGY GWh	777	777
PEAK POWER MW		2316

	31JAN11 INI-SUM	28FEB
--FORT PECK--		
NAT INFLOW	340	340
DEPLETION	-106	-106
EVAPORATION		
MOD INFLOW	446	446
RELEASE	555	555
STOR CHANGE	-109	-109
STORAGE	15070	14961
ELEV FTMSL	2235.3	2234.8
DISCH KCFS	8.9	10.0
POWER		
AVE POWER MW		136
PEAK POW MW		163
ENERGY GWH	91.6	91.6
--GARRISON--		
NAT INFLOW	340	340
DEPLETION	-50	-50
CHAN STOR	-11	-11
EVAPORATION		
REG INFLOW	935	935
RELEASE	1444	1444
STOR CHANGE	-509	-509
STORAGE	18860	18351
ELEV FTMSL	1839.9	1838.3
DISCH KCFS	23.6	26.0
POWER		
AVE POWER MW		325
PEAK POW MW		471
ENERGY GWH	218.5	218.5
--OAHE--		
NAT INFLOW	85	85
DEPLETION	33	33
CHAN STOR	-10	-10
EVAPORATION		
REG INFLOW	1486	1486
RELEASE	1238	1238
STOR CHANGE	249	249
STORAGE	18182	18431
ELEV FTMSL	1605.4	1606.2
DISCH KCFS	22.5	22.3
POWER		
AVE POWER MW		285
PEAK POW MW		701
ENERGY GWH	191.6	191.6
--BIG BEND--		
EVAPORATION		
REG INFLOW	1238	1238
RELEASE	1300	1300
STORAGE	1683	1621
ELEV FTMSL	1421.1	1420.0
DISCH KCFS	19.7	23.4
POWER		
AVE POWER MW		113
PEAK POW MW		529
ENERGY GWH	75.8	75.8
--FORT RANDALL--		
NAT INFLOW	45	45
DEPLETION	3	3
EVAPORATION		
REG INFLOW	1342	1342
RELEASE	1033	1033
STOR CHANGE	309	309
STORAGE	2815	3124
ELEV FTMSL	1345.8	1350.0
DISCH KCFS	17.3	18.6
POWER		
AVE POWER MW		148
PEAK POW MW		339
ENERGY GWH	99.6	99.6
--GAVINS POINT--		
NAT INFLOW	105	105
DEPLETION		
CHAN STOR	-2	-2
EVAPORATION		
REG INFLOW	1135	1135
RELEASE	1166	1166
STOR CHANGE	-31	-31
STORAGE	373	342
ELEV FTMSL	1207.2	1206.0
DISCH KCFS	18.5	21.0
POWER		
AVE POWER MW		73
PEAK POW MW		114
ENERGY GWH	49.2	49.2
--GAVINS POINT - SIOUX CITY--		
NAT INFLOW	200	200
DEPLETION	14	14
REGULATED FLOW AT SIOUX CITY		
KAF	1352	1352
KCFS		24.3
--TOTAL--		
NAT INFLOW	1115	1115
DEPLETION	-106	-106
CHAN STOR	-23	-23
EVAPORATION		
STORAGE	56983	56829
SYSTEM POWER		
AVE POWER MW		1081
PEAK POW MW		2317
ENERGY GWH	726.3	726.3
DAILY GWH		25.9

	INI-SUM	28FEB

	31JAN11 INI-SUM	2010 28FEB	2011
--FORT PECK--			
NAT INFLOW	272	272	
DEPLETION	-56	-56	
EVAPORATION			
MOD INFLOW	328	328	
RELEASE	500	500	
STOR CHANGE	-172	-172	
STORAGE	15070	14898	
ELEV FTMSL	2235.3	2234.5	
DISCH KCFS	8.9	9.0	
POWER			
AVE POWER MW		123	
PEAK POW MW		163	
ENERGY GWH	82.6	82.6	
--GARRISON--			
NAT INFLOW	272	272	
DEPLETION	-34	-34	
CHAN STOR	-1	-1	
EVAPORATION			
REG INFLOW	805	805	
RELEASE	1444	1444	
STOR CHANGE	-639	-639	
STORAGE	18860	18221	
ELEV FTMSL	1839.9	1837.9	
DISCH KCFS	23.6	26.0	
POWER			
AVE POWER MW		325	
PEAK POW MW		469	
ENERGY GWH	218.2	218.2	
--OAHE--			
NAT INFLOW	68	68	
DEPLETION	33	33	
CHAN STOR	-10	-10	
EVAPORATION			
REG INFLOW	1469	1469	
RELEASE	1039	1039	
STOR CHANGE	431	431	
STORAGE	18182	18613	
ELEV FTMSL	1605.4	1606.8	
DISCH KCFS	22.5	18.7	
POWER			
AVE POWER MW		240	
PEAK POW MW		704	
ENERGY GWH	161.2	161.2	
--BIG BEND--			
EVAPORATION			
REG INFLOW	1039	1039	
RELEASE	1101	1101	
STORAGE	1683	1621	
ELEV FTMSL	1421.1	1420.0	
DISCH KCFS	19.7	19.8	
POWER			
AVE POWER MW		96	
PEAK POW MW		529	
ENERGY GWH	64.3	64.3	
--FORT RANDALL--			
NAT INFLOW	36	36	
DEPLETION	3	3	
EVAPORATION			
REG INFLOW	1134	1134	
RELEASE	825	825	
STOR CHANGE	309	309	
STORAGE	2815	3124	
ELEV FTMSL	1345.8	1350.0	
DISCH KCFS	17.3	14.8	
POWER			
AVE POWER MW		119	
PEAK POW MW		339	
ENERGY GWH	79.8	79.8	
--GAVINS POINT--			
NAT INFLOW	84	84	
DEPLETION			
CHAN STOR	5	5	
EVAPORATION			
REG INFLOW	913	913	
RELEASE	944	944	
STOR CHANGE	-31	-31	
STORAGE	373	342	
ELEV FTMSL	1207.2	1206.0	
DISCH KCFS	18.5	17.0	
POWER			
AVE POWER MW		60	
PEAK POW MW		114	
ENERGY GWH	40.0	40.0	
--GAVINS POINT - SIOUX CITY--			
NAT INFLOW	160	160	
DEPLETION	14	14	
REGULATED FLOW AT SIOUX CITY			
KAF	1090	1090	
KCFS		19.6	
--TOTAL--			
NAT INFLOW	892	892	
DEPLETION	-40	-40	
CHAN STOR	-6	-6	
EVAPORATION			
STORAGE	56983	56819	
SYSTEM POWER			
AVE POWER MW		961	
PEAK POW MW		2318	
ENERGY GWH	646.1	646.1	
DAILY GWH		23.1	

	INI-SUM	28FEB

	31JAN11 INI-SUM	28FEB
--FORT PECK--		
NAT INFLOW	408	408
DEPLETION	-89	-89
EVAPORATION		
MOD INFLOW	497	497
RELEASE	555	555
STOR CHANGE	-58	-58
STORAGE	15070	15012
ELEV FTMSL	2235.3	2235.0
DISCH KCFS	8.9	10.0
POWER		
AVE POWER MW		136
PEAK POW MW		163
ENERGY GWH	91.7	91.7
--GARRISON--		
NAT INFLOW	408	408
DEPLETION	-49	-49
CHAN STOR	-11	-11
EVAPORATION		
REG INFLOW	1002	1002
RELEASE	1444	1444
STOR CHANGE	-442	-442
STORAGE	18860	18418
ELEV FTMSL	1839.9	1838.5
DISCH KCFS	23.6	26.0
POWER		
AVE POWER MW		325
PEAK POW MW		472
ENERGY GWH	218.6	218.6
--OAHE--		
NAT INFLOW	102	102
DEPLETION	33	33
CHAN STOR	-10	-10
EVAPORATION		
REG INFLOW	1503	1503
RELEASE	1379	1379
STOR CHANGE	124	124
STORAGE	18182	18306
ELEV FTMSL	1605.4	1605.8
DISCH KCFS	22.5	24.8
POWER		
AVE POWER MW		317
PEAK POW MW		699
ENERGY GWH	213.1	213.1
--BIG BEND--		
EVAPORATION		
REG INFLOW	1379	1379
RELEASE	1441	1441
STORAGE	1683	1621
ELEV FTMSL	1421.1	1420.0
DISCH KCFS	19.7	26.0
POWER		
AVE POWER MW		125
PEAK POW MW		529
ENERGY GWH	84.0	84.0
--FORT RANDALL--		
NAT INFLOW	54	54
DEPLETION	3	3
EVAPORATION		
REG INFLOW	1492	1492
RELEASE	1183	1183
STOR CHANGE	309	309
STORAGE	2815	3124
ELEV FTMSL	1345.8	1350.0
DISCH KCFS	17.3	21.3
POWER		
AVE POWER MW		170
PEAK POW MW		339
ENERGY GWH	114.0	114.0
--GAVINS POINT--		
NAT INFLOW	126	126
DEPLETION		
CHAN STOR	-7	-7
EVAPORATION		
REG INFLOW	1302	1302
RELEASE	1333	1333
STOR CHANGE	-31	-31
STORAGE	373	342
ELEV FTMSL	1207.2	1206.0
DISCH KCFS	18.5	24.0
POWER		
AVE POWER MW		83
PEAK POW MW		114
ENERGY GWH	55.9	55.9
--GAVINS POINT - SIOUX CITY--		
NAT INFLOW	240	240
DEPLETION	14	14
REGULATED FLOW AT SIOUX CITY		
KAF	1559	1559
KCFS		28.1
--TOTAL--		
NAT INFLOW	1338	1338
DEPLETION	-88	-88
CHAN STOR	-28	-28
EVAPORATION		
STORAGE	56983	56822
SYSTEM POWER		
AVE POWER MW		1157
PEAK POW MW		2316
ENERGY GWH	777.3	777.3
DAILY GWH		27.8

	INI-SUM	28FEB

FEB 1, 2011 / BASIC CONDITION / 28.4 MAF / BALANCED
FULL SERV / SHTN NAV SEAS 0 DAYS / PULSE MAR 5.0 MAY 18.7 (CALC)
Elevations & Storages are for Date Shown
Avg Discharge & Energy are Monthly Values
Date of Study: February 1, 2011

	28-Feb-11	31-Mar	2011 30-Apr	31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	2012 31-Jan	29FEB
FORT PECK -------													
ELEV FTMSL	2234.8	2236.3	2237.5	2238.2	2240.4	2240.0	2238.0	2236.9	2236.7	2236.8	2235.7	2234.7	2234.0
DISCH KCFS	10.0	6.0	8.0	11.5	11.5	11.5	11.5	8.8	6.0	6.0	10.5	11.0	11.0
GARRISON --------													
ELEV FTMSL	1838.3	1840.6	1842.3	1842.9	1845.6	1845.8	1843.8	1842.6	1841.7	1841.2	1840.4	1838.8	1837.5
DISCH KCFS	26.0	18.0	22.0	25.5	29.5	29.5	29.5	23.7	18.0	18.0	19.0	25.0	25.0
OAHE ----------													
ELEV FTMSL	1606.2	1608.2	1610.9	1611.7	1613.1	1613.1	1612.1	1610.5	1609.4	1607.7	1606.7	1606.9	1607.5
DISCH KCFS	22.3	21.9	20.7	25.9	26.7	29.7	32.2	32.2	23.9	26.6	22.5	23.7	22.7
BIG BEND --------													
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	23.4	21.9	20.7	25.9	26.7	29.6	31.9	31.7	23.6	26.3	22.4	23.7	22.7
FORT RANDALL ----													
ELEV FTMSL	1350.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	18.6	18.7	23.2	28.1	29.0	30.1	31.9	34.2	33.7	33.8	20.7	18.3	17.0
GAVINS POINT ----													
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	22.6	26.7	30.7	31.6	31.6	33.2	35.5	35.5	35.5	22.5	20.0	20.0
SYSTEM ----------													
STORAGE 1000 AF	56829	58908	60621	61258	63153	63115	61635	60360	59025	57862	57177	56851	56832
ENERGY GWh	10522	691	751	953	980	1062	1106	1006	837	830	754	811	742
PEAK POWER MW		2334	2359	2373	2384	2383	2376	2367	2339	2294	2255	2275	2282

FEB 1, 2011 / LOWER BASIC / 19.2 MAF / BALANCED
FULL SERV / SHTN NAV SEAS 0 DAYS / PULSE MAR 5.0 MAY 12.0 (CALC)

	28-Feb-11	31-Mar	2011 30-Apr	31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	2012 31-Jan	29FEB
FORT PECK -------													
ELEV FTMSL	2234.5	2234.8	2235.0	2234.2	2234.3	2232.7	2230.5	2229.4	2229.0	2228.5	2226.8	2225.2	2224.0
DISCH KCFS	9.0	6.0	7.0	11.0	10.0	10.0	10.0	7.9	6.0	6.0	10.0	10.0	10.0
GARRISON --------													
ELEV FTMSL	1837.9	1838.9	1839.7	1839.9	1840.8	1839.9	1838.0	1836.8	1835.7	1835.0	1833.6	1831.1	1829.1
DISCH KCFS	26.0	16.0	17.5	20.0	24.0	24.0	24.0	20.0	16.0	16.1	19.0	25.0	25.0
OAHE ----------													
ELEV FTMSL	1606.8	1607.0	1607.1	1605.3	1604.2	1601.8	1599.1	1596.6	1595.0	1594.0	1595.1	1596.9	1599.0
DISCH KCFS	18.7	23.7	25.9	31.3	31.6	33.7	33.6	30.8	22.1	19.5	13.2	16.6	15.9
BIG BEND --------													
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	19.8	23.7	25.9	31.3	31.6	33.6	33.2	30.3	21.7	19.1	13.0	16.6	15.9
FORT RANDALL ----													
ELEV FTMSL	1350.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	14.8	19.2	27.5	32.5	32.9	33.7	33.0	32.5	31.7	26.5	11.3	11.2	10.0
GAVINS POINT ----													
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	17.0	21.4	29.8	33.9	34.3	34.3	34.0	33.5	33.1	28.2	12.5	12.5	12.5
SYSTEM ----------													
STORAGE 1000 AF	56819	57703	58023	57369	57368	56038	54235	52809	51347	50319	49956	49798	49905
ENERGY GWh	9600	694	794	989	990	1050	1038	905	757	650	534	629	572
PEAK POWER MW		2321	2324	2315	2313	2296	2274	2260	2237	2196	2164	2188	2199

FEB 1, 2011 / UPPER BASIC / 38.6 MAF / BALANCED
FULL SERV / SHTN NAV SEAS 0 DAYS / PULSE MAR 5.0 MAY 20.0 (CALC)

	28-Feb-11	31-Mar	2011 30-Apr	31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	2012 31-Jan	29FEB
FORT PECK -------													
ELEV FTMSL	2235.0	2236.9	2239.5	2241.7	2247.8	2248.4	2245.8	2243.4	2240.9	2238.6	2236.8	2235.2	2234.0
DISCH KCFS	10.0	8.0	8.0	13.5	13.5	13.5	17.0	17.1	17.0	17.0	14.0	14.0	14.0
GARRISON --------													
ELEV FTMSL	1838.5	1842.6	1845.1	1844.9	1850.4	1851.0	1848.4	1846.0	1843.2	1841.0	1840.7	1838.9	1837.5
DISCH KCFS	26.0	18.0	26.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	22.0	30.0	30.0
OAHE ----------													
ELEV FTMSL	1605.8	1609.3	1612.9	1614.3	1615.5	1613.5	1610.7	1608.6	1608.0	1607.0	1606.1	1606.5	1607.5
DISCH KCFS	24.8	19.1	24.1	40.4	43.9	53.4	54.8	52.3	44.3	46.7	27.1	27.2	26.1
BIG BEND --------													
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	26.0	19.1	24.1	40.4	43.9	53.3	54.5	52.0	44.0	46.6	27.0	27.2	26.1
FORT RANDALL ----													
ELEV FTMSL	1350.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	21.3	17.1	27.5	43.6	47.7	54.2	54.7	54.7	54.3	54.3	25.4	22.0	20.6
GAVINS POINT ----													
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	24.0	22.6	32.0	47.0	52.0	56.5	56.5	56.5	56.5	56.5	28.0	24.0	24.0
SYSTEM ----------													
STORAGE 1000 AF	56822	60054	62666	63596	67419	67108	64566	62350	60005	57960	57297	56867	56809
ENERGY GWh	14340	665	871	1373	1388	1551	1557	1472	1414	1361	885	942	861
PEAK POWER MW		2355	2381	2388	2402	2391	2374	2364	2346	2287	2254	2274	2282

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB11		2011											2012			
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--																	
NAT INFLOW	7571	300	140	180	757	1148	1720	871	353	333	385	192	90	102	329	312	360
DEPLETION	418	-36	-17	-21	25	298	525	234	11	-75	-42	-41	-19	-22	-132	-153	-118
EVAPORATION	466							29	90	112	97	44	20	23	51		
MOD INFLOW	6687	335	156	201	732	850	1195	608	252	296	330	189	88	101	410	465	478
RELEASE	6856	179	83	107	476	707	684	707	707	525	369	179	83	95	646	676	633
STOR CHANGE	-169	157	73	94	256	143	511	-99	-455	-228	-39	10	5	5	-235	-211	-155
STORAGE	14961	15118	15191	15285	15541	15684	16194	16095	15640	15412	15373	15383	15388	15393	15158	14946	14792
ELEV FTMSL	2234.8	2235.5	2235.9	2236.3	2237.5	2238.2	2240.4	2240.0	2238.0	2236.9	2236.7	2236.8	2236.8	2236.8	2235.7	2234.7	2234.0
DISCH KCFS	10.0	6.0	6.0	6.0	8.0	11.5	11.5	11.5	11.5	8.8	6.0	6.0	6.0	6.0	10.5	11.0	11.0
POWER																	
AVE POWER MW		82	82	82	110	156	157	157	156	121	83	83	83	83	143	148	148
PEAK POW MW		163	164	164	165	165	167	167	165	164	164	164	164	164	163	163	162
ENERGY GWH	1130.1	29.6	13.8	17.8	79.2	115.8	112.8	117.0	116.4	87.4	61.4	29.7	13.9	15.9	106.3	110.3	102.8
--GARRISON--																	
NAT INFLOW	11549	692	323	415	1430	1275	2743	1830	604	452	523	199	93	106	247	261	356
DEPLETION	989	4	2	3	-3	177	765	602	107	-142	-25	-121	-56	-65	-115	-87	-57
CHAN STOR	-10	40			-20	-34				26	27				-44	-5	
EVAPORATION	542							34	106	131	113	51	24	27	58		
REG INFLOW	16864	906	404	520	1889	1771	2662	1901	1098	1014	831	448	209	239	906	1019	1046
RELEASE	17100	536	250	321	1309	1568	1755	1814	1814	1412	1107	536	250	286	1168	1537	1438
STOR CHANGE	-236	370	154	198	580	203	907	87	-716	-398	-275	-88	-41	-47	-262	-518	-392
STORAGE	18351	18721	18875	19073	19654	19857	20764	20851	20136	19738	19462	19375	19334	19287	19025	18507	18115
ELEV FTMSL	1838.3	1839.5	1839.9	1840.6	1842.3	1842.9	1845.6	1845.8	1843.8	1842.6	1841.7	1841.5	1841.4	1841.2	1840.4	1838.8	1837.5
DISCH KCFS	26.0	18.0	18.0	18.0	22.0	25.5	29.5	29.5	29.5	23.7	18.0	18.0	18.0	18.0	19.0	25.0	25.0
POWER																	
AVE POWER MW		226	227	227	278	324	378	381	379	303	229	228	228	228	240	314	311
PEAK POW MW		475	477	479	489	498	500	500	499	494	483	482	482	481	478	473	468
ENERGY GWH	2628.0	81.2	38.1	49.1	200.4	241.2	271.9	283.1	281.7	218.0	170.4	82.2	38.3	43.8	178.8	233.3	216.4
--OAHE--																	
NAT INFLOW	3203	419	195	251	866	400	470	190	65	111	66	34	16	18		12	90
DEPLETION	681	24	11	14	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	4	32			-16	-13	-15			22	22				-4	-24	
EVAPORATION	534							33	105	130	111	50	23	26	56		
REG INFLOW	19092	963	434	558	2110	1884	2065	1798	1658	1386	1093	518	242	277	1097	1507	1500
RELEASE	18683	649	304	396	1234	1592	1588	1824	1980	1914	1471	702	361	519	1386	1454	1308
STOR CHANGE	409	315	130	162	877	291	477	-27	-322	-527	-378	-184	-119	-243	-290	53	192
STORAGE	18431	18745	18875	19038	19915	20206	20683	20657	20334	19807	19430	19246	19127	18884	18595	18648	18840
ELEV FTMSL	1606.2	1607.2	1607.6	1608.2	1610.9	1611.7	1613.1	1613.1	1612.1	1610.5	1609.4	1608.8	1608.4	1607.7	1606.7	1606.9	1607.5
DISCH KCFS	22.3	21.8	21.9	22.2	20.7	25.9	26.7	29.7	32.2	32.2	23.9	23.6	26.0	32.7	22.5	23.7	22.7
POWER																	
AVE POWER MW		280	283	287	271	340	353	393	425	422	313	307	337	422	291	304	293
PEAK POW MW		706	708	711	726	730	737	737	732	724	718	715	713	709	704	705	708
ENERGY GWH	2952.5	100.9	47.5	62.0	194.8	253.3	254.0	292.5	316.4	303.8	232.6	110.5	56.6	81.1	216.2	226.2	204.0
--BIG BEND--																	
EVAPORATION	103							6	20	25	22	10	5	5	11		
REG INFLOW	18579	649	304	396	1234	1592	1588	1818	1961	1889	1449	692	356	514	1375	1454	1308
RELEASE	18579	649	304	396	1234	1592	1588	1818	1961	1889	1449	692	356	514	1375	1454	1308
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	23.4	21.8	21.9	22.2	20.7	25.9	26.7	29.6	31.9	31.7	23.6	23.3	25.7	32.4	22.4	23.7	22.7
POWER																	
AVE POWER MW		103	103	104	97	121	125	138	149	150	115	117	128	161	112	116	109
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	1074.9	37.2	17.2	22.4	69.9	90.2	89.9	103.0	111.0	108.3	85.9	42.0	21.6	31.0	83.4	86.2	75.8
--FORT RANDALL--																	
NAT INFLOW	910	110	51	66	152	147	152	57	39	38	5	3	1	2	12	25	49
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	117							8	25	31	25	9	4	4	10		
REG INFLOW	19293	757	355	461	1382	1730	1728	1849	1959	1888	1429	685	353	510	1375	1476	1354
RELEASE	19294	466	221	461	1382	1730	1728	1849	1959	2034	2072	1006	469	536	1273	1126	980
STOR CHANGE	-1	291	134					0	0	-146	-643	-321	-116	-26	102	350	374
STORAGE	3124	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2399	2749	3123
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	18.6	15.7	15.9	25.8	23.2	28.1	29.0	30.1	31.9	34.2	33.7	33.8	33.8	33.8	20.7	18.3	17.0
POWER																	
AVE POWER MW		130	134	218	196	237	245	253	268	285	269	255	247	244	151	139	135
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1893.6	46.6	22.6	47.1	141.3	176.4	176.1	188.3	199.4	205.3	200.3	91.7	41.4	46.8	112.7	103.2	94.3
--GAVINS POINT--																	
NAT INFLOW	1755	122	57	73	207	186	178	137	115	111	120	59	28	31	100	100	130
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	2	6	0	-19	5	-9	-2	-2	-3	-4	1	0	0	0	24	4	2
EVAPORATION	36							2	6	9	8	3	2	2	4		
REG INFLOW	20901	595	278	516	1589	1888	1880	1943	2054	2137	2183	1056	493	563	1383	1230	1112
RELEASE	20901	595	278	516	1589	1888	1880	1943	2041	2112	2183	1056	493	563	1383	1230	1150
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	20.0	20.0	28.9	26.7	30.7	31.6	31.6	33.2	35.5	35.5	35.5	35.5	35.5	22.5	20.0	20.0
POWER																	
AVE POWER MW		69	69	98	91	103	105	105	109	115	116	116	116	116	76	70	69
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	843.0	24.8	11.6	21.2	65.6	76.3	75.3	77.8	80.9	82.8	86.3	41.7	19.5	22.3	56.7	52.0	48.3
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	2805	287	134	172	594	400	350	250	150	110	86	42	19	22	56	40	92
DEPLETION	266	7	3	4	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY																	
KAF	23440	876	409	684	2161	2252	2199	2154	2155	2198	2258	1092	509	582	1426	1256	1228
KCFS		29.4	29.4	38.3	36.3	36.6	37.0	35.0	35.1	36.9	36.7	36.7	36.7	36.7	23.2	20.4	21.4
--TOTAL--																	
NAT INFLOW	27793	1931	901	1158	4006	3556	5613	3335	1326	1155	1185	528	246	282	744	750	1077
DEPLETION	2548	0	0	0	102	610	1502	1105	295	-163	-63	-149	-69	-79	-209	-204	-130
CHAN STOR	-4	77	0	-19	-30	-57	-17	-2	-3	43	50	0	0	-1	-23	-24	2
EVAPORATION	1798							112	352	437	375	167	77	88	189		
STORAGE	56829	57962	58453	58908	60621	61258	63153	63115	61635	60360	59025	58443	58172	57862	57177	56851	56832
SYSTEM POWER																	
AVE POWER MW		890	898	1017	1043	1281	1361	1427	1486	1397	1125	1105	1139	1254	1013	1091	1066
PEAK POW MW		2327	2329	2334	2359	2373	2384	2383	2376	2367	2339	2313	2301	2294	2255	2275	2282
ENERGY GWH	10522.2	320.3	150.8	219.7	751.2	953.2	980.1	1061.7	1105.8	1005.6	836.9	397.9	191.3	240.8	754.0	811.4	741.6
DAILY GWH		21.4	21.5	24.4	25.0	30.7	32.7	34.2	35.7	33.5	27.0	26.5	27.3	30.1	24.3	26.2	25.6

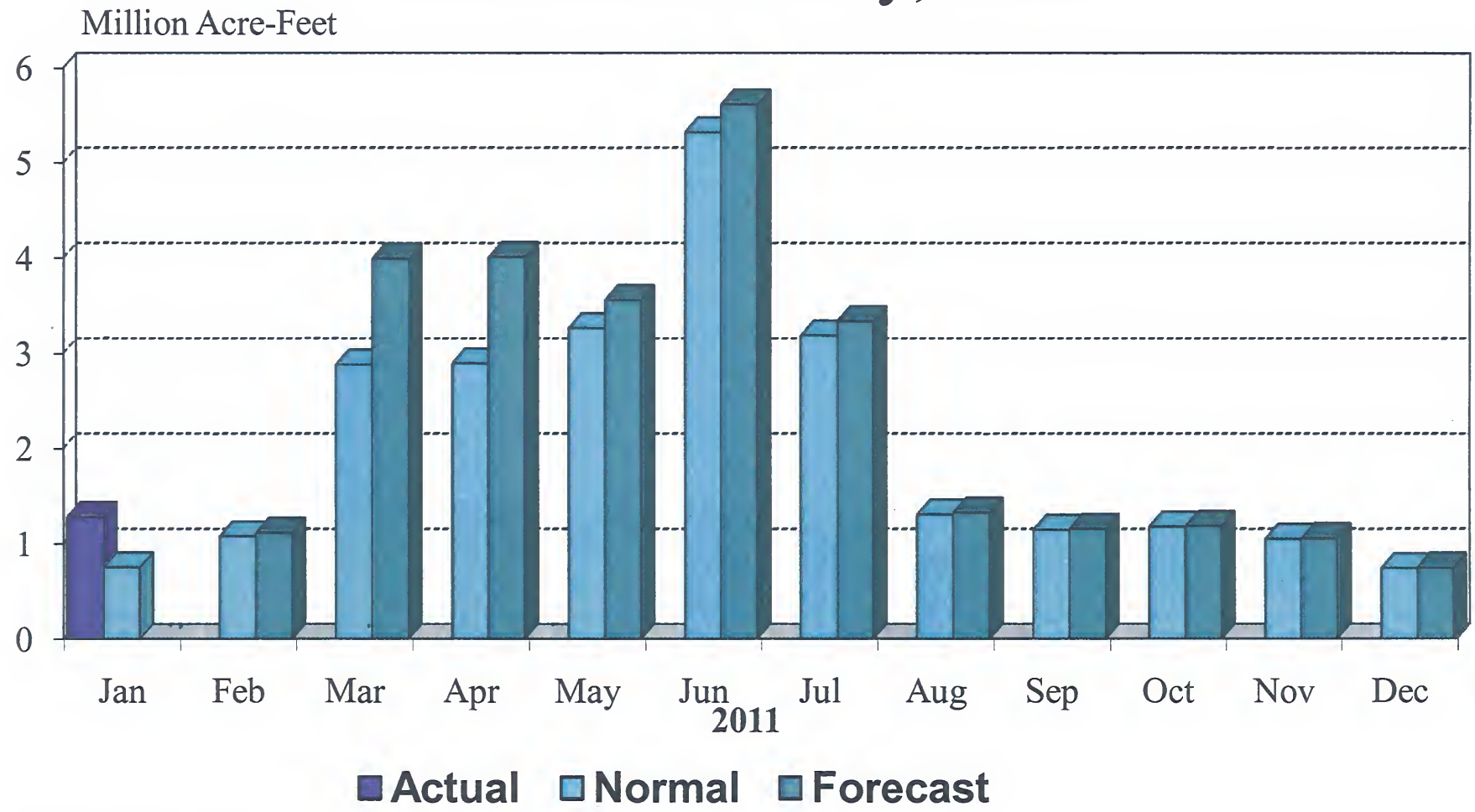
VALUES IN 1000 AF EXCEPT AS INDICATED

28FEB11		2011											2012			
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--																	
NAT INFLOW	5102	195	91	117	492	689	1032	523	282	266	308	154	72	82	263	250	288
DEPLETION	373	-17	-8	-10	38	195	405	219	1	-108	-90	-24	-11	-13	-80	-69	-55
EVAPORATION	533							33	104	128	111	50	23	27	57		
MOD INFLOW	4196	212	99	127	454	494	627	271	177	246	287	127	60	68	286	319	343
RELEASE	6290	179	83	107	417	676	595	615	615	472	369	179	83	95	615	615	575
STOR CHANGE	-2094	33	15	20	37	-182	32	-344	-437	-226	-82	-51	-24	-27	-329	-296	-232
STORAGE	14898	14931	14946	14966	15004	14821	14853	14509	14071	13845	13763	13712	13688	13661	13332	13036	12804
ELEV FTMSL	2234.5	2234.7	2234.7	2234.8	2235.0	2234.2	2234.3	2232.7	2230.5	2229.4	2229.0	2228.7	2228.6	2228.5	2226.8	2225.2	2224.0
DISCH KCFS	9.0	6.0	6.0	6.0	7.0	11.0	10.0	10.0	10.0	7.9	6.0	6.0	6.0	6.0	10.0	10.0	10.0
POWER																	
AVE POWER MW		82	82	82	96	148	136	136	135	107	81	81	81	80	133	133	132
PEAK POW MW		163	163	163	163	162	162	161	160	159	159	158	158	158	157	156	154
ENERGY GWH	1023.6	29.5	13.8	17.7	68.9	110.0	97.9	101.0	100.4	76.9	60.0	29.0	13.5	15.5	99.1	98.6	91.7
--GARRISON--																	
NAT INFLOW	7642	450	210	270	930	765	1646	1098	483	362	418	159	74	85	198	209	285
DEPLETION	933	15	7	9	21	111	524	493	111	-107	20	-93	-43	-50	-52	-22	-12
CHAN STOR	-10	30			-10	-39	10			20	19				-40		
EVAPORATION	622							40	122	150	129	58	27	31	66		
REG INFLOW	12367	643	286	368	1316	1291	1727	1180	865	811	657	373	174	199	759	846	872
RELEASE	14912	476	222	286	1041	1230	1428	1476	1476	1190	984	476	222	262	1168	1537	1438
STOR CHANGE	-2545	167	64	82	274	61	299	-295	-611	-378	-327	-103	-48	-63	-409	-691	-566
STORAGE	18221	18388	18452	18534	18808	18869	19168	18873	18262	17883	17557	17453	17405	17342	16933	16242	15676
ELEV FTMSL	1837.9	1838.4	1838.6	1838.9	1839.7	1839.9	1840.8	1839.9	1838.0	1836.8	1835.7	1835.3	1835.2	1835.0	1833.6	1831.1	1829.1
DISCH KCFS	26.0	16.0	16.0	16.0	17.5	20.0	24.0	24.0	24.0	20.0	16.0	16.0	16.0	16.5	19.0	25.0	25.0
POWER																	
AVE POWER MW		200	200	201	220	252	303	303	300	248	198	197	196	202	231	300	295
PEAK POW MW		471	472	473	476	477	480	477	470	465	461	460	460	459	454	445	437
ENERGY GWH	2230.2	71.9	33.7	43.3	158.4	187.4	217.9	225.2	223.3	178.6	147.0	70.8	33.0	38.8	172.1	223.0	205.6
--OAHE--																	
NAT INFLOW	2092	272	127	163	563	240	282	114	52	89	53	27	13	14		10	72
DEPLETION	681	24	11	14	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	2	40			-6	-10	-16			17	18			-2	-11	-27	
EVAPORATION	552							36	110	134	113	51	23	27	58		
REG INFLOW	15773	765	338	435	1549	1389	1549	1381	1302	1134	951	451	211	247	1086	1502	1482
RELEASE	18047	646	300	513	1541	1922	1880	2072	2069	1835	1361	589	310	259	814	1023	913
STOR CHANGE	-2274	119	38	-79	8	-533	-331	-691	-767	-701	-410	-138	-99	-12	272	480	569
STORAGE	18613	18732	18770	18691	18699	18166	17835	17144	16377	15676	15266	15129	15030	15018	15290	15770	16339
ELEV FTMSL	1606.8	1607.2	1607.3	1607.0	1607.1	1605.3	1604.2	1601.8	1599.1	1596.6	1595.0	1594.5	1594.1	1594.0	1595.1	1596.9	1599.0
DISCH KCFS	18.7	21.7	21.6	28.8	25.9	31.3	31.6	33.7	33.6	30.8	22.1	19.8	22.3	16.3	13.2	16.6	15.9
POWER																	
AVE POWER MW		279	279	370	333	399	401	423	416	376	268	238	268	196	160	202	195
PEAK POW MW		706	707	705	706	696	690	678	664	651	643	641	639	639	644	653	663
ENERGY GWH	2720.7	100.6	46.9	79.9	239.9	297.2	288.4	314.6	309.7	271.0	199.4	85.9	45.0	37.6	118.9	150.2	135.6
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	17918	646	300	513	1541	1922	1880	2064	2044	1804	1334	577	304	252	800	1023	913
RELEASE	17918	646	300	513	1541	1922	1880	2064	2044	1804	1334	577	304	252	800	1023	913
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	19.8	21.7	21.6	28.8	25.9	31.3	31.6	33.6	33.2	30.3	21.7	19.4	21.9	15.9	13.0	16.6	15.9
POWER																	
AVE POWER MW		103	101	135	121	146	148	157	156	144	106	97	110	80	66	82	76
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	1032.5	37.0	17.0	29.1	87.3	108.8	106.4	116.9	115.7	103.5	79.1	35.1	18.5	15.4	48.9	60.8	53.0
--FORT RANDALL--																	
NAT INFLOW	599	72	33	43	99	88	91	34	31	30	4	3	1	1	10	20	39
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	146							10	32	39	31	12	5	5	12		
REG INFLOW	18291	716	333	556	1636	2001	1959	2070	2028	1788	1306	566	300	248	795	1040	949
RELEASE	18291	425	199	556	1636	2001	1959	2070	2028	1934	1949	887	416	274	692	690	575
STOR CHANGE	0	291	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3124	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	14.8	14.3	14.3	31.1	27.5	32.5	32.9	33.7	33.0	32.5	31.7	29.8	30.0	17.3	11.3	11.2	10.0
POWER																	
AVE POWER MW		118	121	262	232	274	277	283	277	271	254	225	219	126	83	85	80
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1812.8	42.5	20.3	56.6	166.9	203.6	199.2	210.4	206.3	195.4	188.7	81.0	36.8	24.2	61.8	63.6	55.6
--GAVINS POINT--																	
NAT INFLOW	1235	79	37	48	135	112	107	82	92	89	96	47	22	25	80	80	104
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	8	1	0	-32	7	-10	-1	-1	1	1	1	3	0	24	11	0	2
EVAPORATION	45							3	8	11	10	4	2	2	5		
REG INFLOW	19375	506	236	571	1773	2084	2041	2109	2104	2018	2035	928	433	317	769	769	681
RELEASE	19375	506	236	571	1773	2084	2041	2109	2091	1993	2035	928	433	317	769	769	719
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	17.0	17.0	17.0	32.0	29.8	33.9	34.3	34.3	34.0	33.5	33.1	31.2	31.2	20.0	12.5	12.5	12.5
POWER																	
AVE POWER MW		59	59	106	100	110	111	111	110	111	111	107	107	71	44	44	44
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	780.6	21.2	9.9	22.8	72.3	81.6	79.6	82.2	82.1	79.8	82.5	38.3	17.9	13.5	33.0	33.0	30.7
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1865	187	87	112	386	240	210	150	120	87	69	33	15	18	45	32	74
DEPLETION	266	7	3	4	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY																	
KAF	20974	686	320	679	2137	2288	2220	2220	2175	2056	2093	955	446	332	801	787	779
KCFS		23.0	23.1	38.0	35.9	37.2	37.3	36.1	35.4	34.6	34.0	32.1	32.1	20.9	13.0	12.8	13.5
--TOTAL--																	
NAT INFLOW	18535	1255	585	753	2605	2134	3368	2001	1060	923	948	422	197	225	596	601	862
DEPLETION	2447	30	14	18	139	441	1141	981	289	-161	-66	-104	-49	-55	-94	-55	-22
CHAN STOR	0	71	0	-32	-9	-59	-7	-1	1	39	39	3	0	22	-40	-27	2
EVAPORATION	2027							129	400	493	421	187	86	98	213		
STORAGE	56819	57429	57680	57703	58023	57369	57368	56038	54235	52809	51347	50734	50447	50319	49956	49798	49905
SYSTEM POWER																	
AVE POWER MW		841	843	1155	1102	1329	1374	1412	1395	1257	1017	945	980	755	717	846	822
PEAK POW MW		2322	2321	2321	2324	2315	2313	2296	2274	2260	2237	2210	2199	2196	2164	2188	2199
ENERGY GWH	9600.3	302.8	141.6	249.4	793.7	988.6	989.5	1050.3	1037.6	905.2	756.7	340.1	164.7	144.9	533.8	629.3	572.2
DAILY GWH		20.2	20.2	27.7	26.5	31.9	33.0	33.9	33.5	30.2	24.4	22.7	23.5	18.1	17.2	20.3	19.7
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB

28FEB11			2011									2012				
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--																	
NAT INFLOW	10384	405	189	243	1022	1607	2752	1219	424	400	462	231	108	123	395	374	432
DEPLETION	191	-24	-11	-14	-23	260	513	204	-62	-129	-89	-30	-14	-16	-123	-146	-105
EVAPORATION	340							23	73	91	78	18	8	9	39		
MOD INFLOW	9853	428	200	257	1045	1347	2239	992	413	438	473	242	113	129	479	520	537
RELEASE	10080	238	111	143	476	830	803	830	1045	1020	1045	506	236	270	861	861	805
STOR CHANGE	-227	190	89	114	569	517	1436	162	-633	-582	-572	-263	-123	-140	-381	-341	-268
STORAGE	15012	15202	15291	15405	15974	16491	17926	18088	17455	16873	16302	16038	15915	15775	15394	15053	14785
ELEV FTMSL	2235.0	2235.9	2236.4	2236.9	2239.5	2241.7	2247.8	2248.4	2245.8	2243.4	2240.9	2239.7	2239.2	2238.6	2236.8	2235.2	2234.0
DISCH KCFS	10.0	8.0	8.0	8.0	8.0	13.5	13.5	13.5	17.0	17.1	17.0	17.0	17.0	17.0	14.0	14.0	14.0
POWER																	
AVE POWER MW		110	110	110	110	167	170	172	171	170	168	166	166	165	165	164	162
PEAK POW MW		164	164	164	166	168	172	173	170	169	167	166	166	165	164	163	162
ENERGY GWH	1387.2	39.4	18.4	23.7	79.5	124.2	122.4	128.3	127.5	122.1	124.8	59.9	27.8	31.7	122.6	121.7	113.1
--GARRISON--																	
NAT INFLOW	16007	935	436	560	1931	1785	4389	2562	725	542	628	239	112	127	296	313	427
DEPLETION	997	4	2	3	18	100	802	621	93	-133		-118	-55	-63	-117	-96	-64
CHAN STOR	-36	20				-53			-33	-1	1	0			29		
EVAPORATION	386							27	84	104	88	20	9	11	44		
REG INFLOW	24668	1188	545	701	2389	2462	4390	2744	1560	1590	1587	842	393	450	1260	1270	1296
RELEASE	24979	536	250	321	1547	2521	2440	2521	2521	2438	2521	1220	569	651	1353	1845	1726
STOR CHANGE	-311	652	295	379	842	-59	1951	223	-961	-848	-934	-377	-176	-201	-93	-575	-429
STORAGE	18418	19070	19365	19744	20586	20528	22478	22702	21741	20893	19958	19581	19405	19204	19111	18536	18107
ELEV FTMSL	1838.5	1840.5	1841.4	1842.6	1845.1	1844.9	1850.4	1851.0	1848.4	1846.0	1843.2	1842.1	1841.6	1841.0	1840.7	1838.9	1837.5
DISCH KCFS	26.0	18.0	18.0	18.0	26.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	22.0	30.0	30.0
POWER																	
AVE POWER MW		227	228	229	333	500	502	504	503	501	499	494	484	482	278	376	372
PEAK POW MW		479	482	494	500	499	504	504	502	500	498	486	483	481	480	473	468
ENERGY GWH	3720.7	81.6	38.3	49.4	239.5	371.7	361.2	375.0	374.4	360.9	371.4	177.9	81.3	92.5	206.9	279.7	259.1
--OAHE--																	
NAT INFLOW	4408	566	264	339	1169	560	752	266	78	133	79	40	19	21		14	108
DEPLETION	681	24	11	14	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	-11	32			-31	-56				0	0				76	-32	
EVAPORATION	362							26	79	96	82	19	9	10	42		
REG INFLOW	28333	1110	503	646	2636	2954	3047	2588	2404	2448	2528	1240	578	661	1375	1808	1806
RELEASE	27808	558	267	347	1435	2483	2610	3284	3367	3113	2724	1301	641	839	1666	1673	1502
STOR CHANGE	525	552	236	300	1201	471	436	-695	-962	-665	-196	-61	-62	-178	-291	135	304
STORAGE	18306	18858	19094	19393	20594	21066	21502	20807	19845	19180	18984	18923	18861	18683	18392	18527	18831
ELEV FTMSL	1605.8	1607.6	1608.3	1609.3	1612.9	1614.3	1615.5	1613.5	1610.7	1608.6	1608.0	1607.8	1607.6	1607.0	1606.1	1606.5	1607.5
DISCH KCFS	24.8	18.8	19.2	19.4	24.1	40.4	43.9	53.4	54.8	52.3	44.3	43.7	46.1	52.9	27.1	27.2	26.1
POWER																	
AVE POWER MW		241	249	253	317	534	584	694	697	662	570	561	591	660	347	348	336
PEAK POW MW		708	712	717	736	743	749	739	724	714	710	709	708	705	700	703	708
ENERGY GWH	4345.0	86.9	41.8	54.6	228.1	397.6	420.4	516.2	518.9	476.8	424.1	202.1	99.4	126.6	258.5	259.2	233.7
--BIG BEND--																	
EVAPORATION	71							5	15	19	16	4	2	2	9		
REG INFLOW	27737	558	267	347	1435	2483	2610	3279	3352	3094	2708	1297	639	837	1658	1673	1502
RELEASE	27737	558	267	347	1435	2483	2610	3279	3352	3094	2708	1297	639	837	1658	1673	1502
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	26.0	18.8	19.2	19.4	24.1	40.4	43.9	53.3	54.5	52.0	44.0	43.6	46.0	52.8	27.0	27.2	26.1
POWER																	
AVE POWER MW		89	90	91	113	189	205	249	255	246	213	215	227	259	135	133	125
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	1598.5	32.0	15.1	19.6	81.3	140.5	147.7	185.4	189.5	176.9	158.8	77.5	38.1	49.8	100.2	99.0	87.0
--FORT RANDALL--																	
NAT INFLOW	1251	149	70	89	205	206	243	80	47	46	6	4	2	2	14	30	59
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	81							6	19	24	18	4	2	2	7		
REG INFLOW	28830	706	335	435	1636	2680	2841	3335	3365	3109	2694	1295	638	836	1664	1700	1558
RELEASE	28830	415	201	435	1636	2680	2841	3335	3365	3255	3337	1617	754	862	1561	1350	1184
STOR CHANGE	0	291	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3124	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	21.3	13.9	14.5	24.4	27.5	43.6	47.7	54.2	54.7	54.7	54.3	54.3	54.3	54.3	25.4	22.0	20.6
POWER																	
AVE POWER MW		115	123	206	232	343	356	355	355	352	335	306	290	284	185	166	163
PEAK POW MW		351	356	356	356	356	356	355	355	349	317	294	285	283	294	319	339
ENERGY GWH	2404.3	41.5	20.6	44.5	166.9	254.9	256.4	264.2	264.1	253.5	249.4	110.2	48.7	54.6	137.8	123.5	113.6
--GAVINS POINT--																	
NAT INFLOW	2311	166	77	99	279	260	285	192	138	133	144	71	33	38	120	120	156
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-1	14	-1	-19	-6	-31	-8	-12	-1	0	1	0	0	0	54	6	3
EVAPORATION	24							2	5	6	6	1	1	1	3		
REG INFLOW	31001	595	278	516	1904	2890	3094	3474	3487	3387	3474	1681	784	897	1722	1476	1343
RELEASE	31001	595	278	516	1904	2890	3094	3474	3474	3362	3474	1681	784	897	1722	1476	1381
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	24.0	20.0	20.0	28.9	32.0	47.0	52.0	56.5	56.5	56.5	56.5	56.5	56.5	56.5	28.0	24.0	24.0
POWER																	
AVE POWER MW		69	69	98	106	112	111	110	111	114	115	115	115	115	79	79	78
PEAK POW MW		114	114	114	114	112	111	110	112	115	115	115	115	115	78	78	76
ENERGY GWH	884.5	24.8	11.6	21.2	76.0	83.7	80.2	82.2	82.9	82.1	85.4	41.3	19.3	22.0	58.5	58.7	54.5
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	3814	388	181	233	802	560	560	350	180	132	103	50	23	27	67	48	110
DEPLETION	266	7	3	4	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY																	
KAF	34549	976	456	745	2684	3414	3623	3785	3618	3470	3566	1725	805	920	1776	1510	1477
KCFS		32.8	32.8	41.7	45.1	55.5	60.9	61.6	58.8	58.3	58.0	58.0	58.0	58.0	28.9	24.6	25.7
--TOTAL--																	
NAT INFLOW	38175	2608	1216	1564	5408	4978	8981	4669	1592	1386	1422	634	296	338	892	899	1292
DEPLETION	2329	12	6	7	75	495	1527	1094	208	-208	-85	-135	-63	-72	-202	-206	-124
CHAN STOR	-46	66	-1	-19	-37	-140	-8	-12	-34	-1	2	0	0	-1	161	-26	3
EVAPORATION	1264							88	275	338	288	67	31	35	143		
STORAGE	56822	58508	59262	60054	62666	63596	67419	67108	64566	62350	60005	58982	58505	57960	57297	56867	56809
SYSTEM POWER																	
AVE POWER MW		851	868	987	1210	1845	1928	2085	2093	2045	1901	1858	1873	1965	1189	1266	1237
PEAK POW MW		2333	2338	2355	2381	2388	2402	2391	2374	2364	2346	2309	2295	2287	2254	2274	2282
ENERGY GWH	14340.2	306.3	145.8	213.1	871.2	1372.6	1388.2	1551.2	1557.2	1472.3	1414.0	669.0	314.7	377.3	884.5	941.8	860.9
DAILY GWH		20.4	20.8	23.7	29.0	44.3	46.3	50.0	50.2	49.1	45.6	44.6	45.0	47.2	28.5	30.4	29.7
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB

CY 2011 Missouri River Runoff

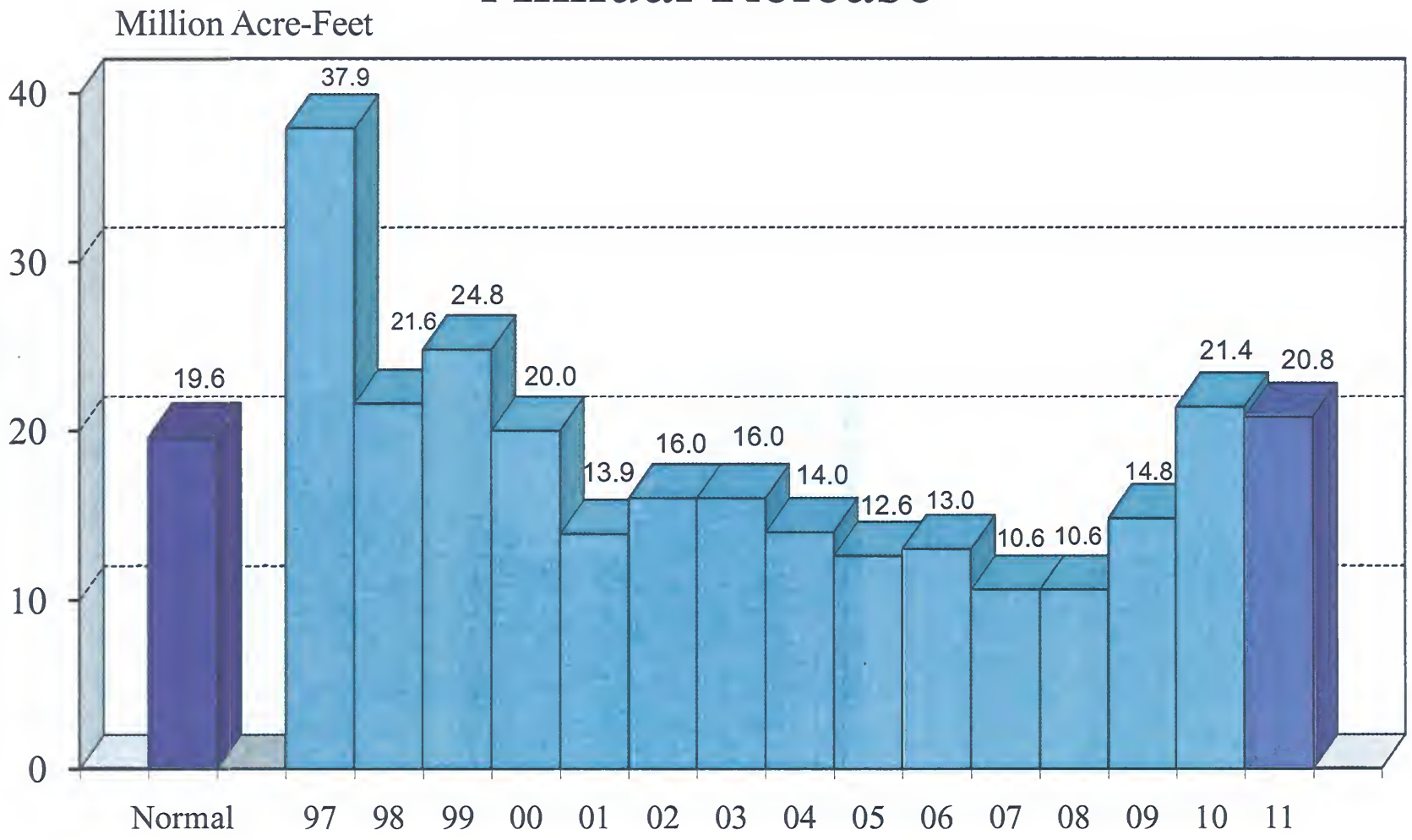
Above Sioux City, Iowa



Feb 1, 2011 Forecast – 28.4 MAF - 114%
Normal: 24.8 MAF

Gavins Point

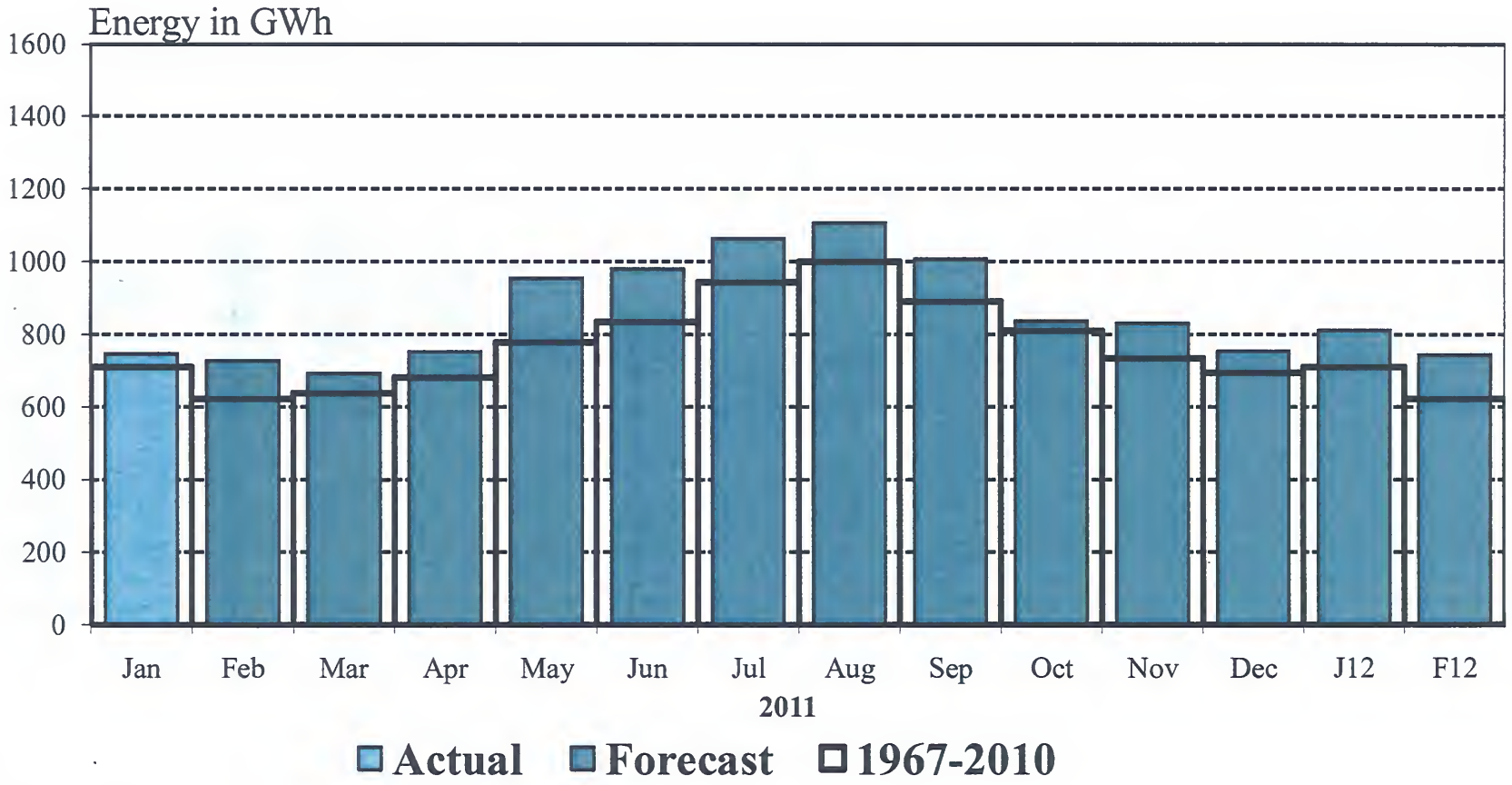
Annual Release



Feb 1, 2011 Forecast Upper Basic: 30.6 MAF Lower Basic: 20.0 MAF

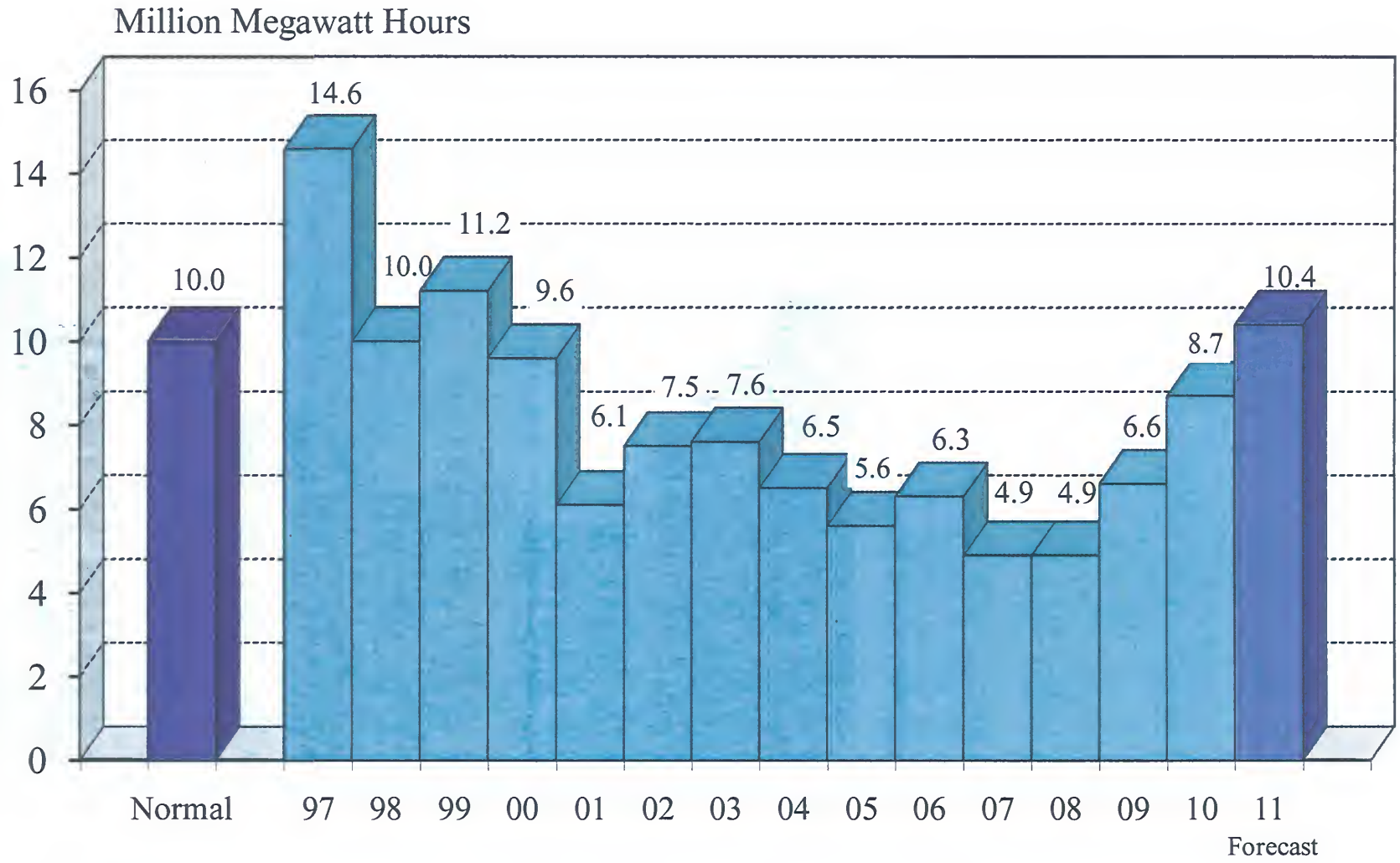
Missouri River Mainstem System

Forecasted Energy Generation



Upper Basic: 14,060 GWh
Basic: 10,440 GWh
Lower Basic: 9,790 GWh

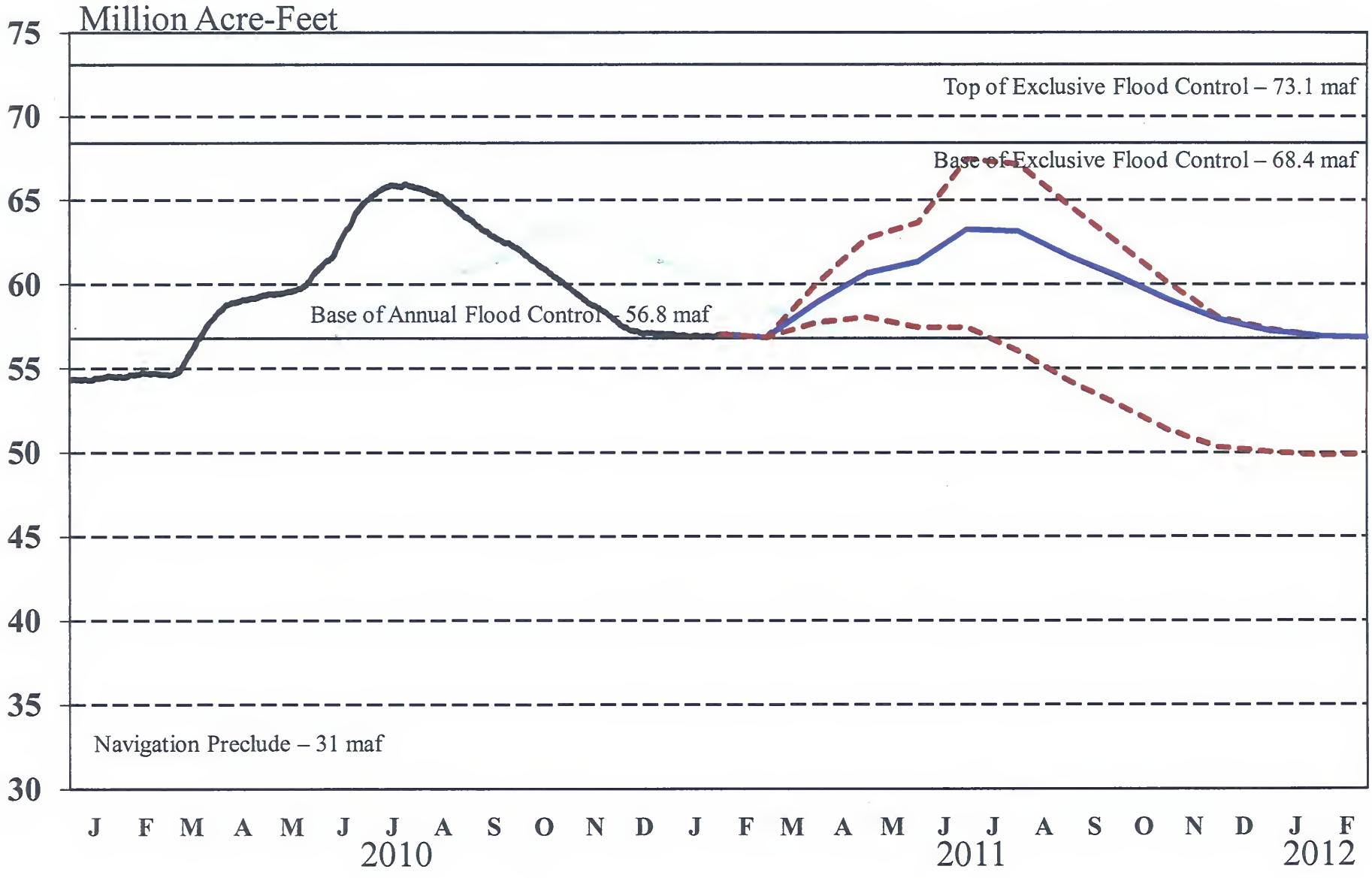
Mainstem System Generation



Feb 1, 2011 Forecast Upper Basic: 14.1 Lower Basic: 9.8

System Storage

Feb 1st Forecast



[redacted] NWO

From: [redacted] NWD02
Sent: Wednesday, February 02, 2011 11:44 AM
To: Farhat, Jody S NWD02; [redacted] NWD02; [redacted] NWD02; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWD02; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] HQ02@NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWD02; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWD02; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWD02; [redacted] W NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; Schenk, Kathryn M NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWD02; [redacted] NWO; [redacted] NWO; [redacted] NWO; Stamm, Kevin D NWD02; Farmer, Monique L NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO
Subject: Feb 2011 Monthly Reservoir Studies - Conf call Wed Feb 2nd at 12:30 pm Central Time - Draft studies attached (UNCLASSIFIED)
Attachments: resfcastfeb.pdf

Classification: UNCLASSIFIED
Caveats: NONE

Phone No. [redacted]
Access Code [redacted]
Note: If prompted for a security code, type in [redacted] followed by the # sign.

[redacted]
Hydraulic Engineer
Missouri River Basin Water Management
U.S. Army Corps of Engineers
[redacted]

Classification: UNCLASSIFIED
Caveats: NONE

FEB 1, 2011 - BASIC CONDITION
END OF FEB 2011 - UNBAL FP +0.8 GA +0.8 OA -1.3
Elevations & Storages are for Date Shown
Avg Discharge & Energy are Monthly Values
Date of Study: February 1, 2011

	31-Jan-11	28-Feb
FORT PECK -------		
ELEV FTMSL	2235.3	2234.8
DISCH KCFS	8.9	10.0
GARRISON --------		
ELEV FTMSL	1839.9	1838.3
DISCH KCFS	23.6	26.0
OAHE ------------		
ELEV FTMSL	1605.4	1606.2
DISCH KCFS	22.5	22.3
BIG BEND --------		
ELEV FTMSL	1421.1	1420.0
DISCH KCFS	19.7	23.4
FORT RANDALL ----		
ELEV FTMSL	1345.8	1350.0
DISCH KCFS	17.3	18.6
GAVINS POINT ----		
ELEV FTMSL	1207.2	1206.0
DISCH KCFS	18.5	21.0
SYSTEM ----------		
STORAGE 1000 AF	56983	56829
ENERGY GWh	726	726
PEAK POWER MW		2317

FEB 1, 2011 - LOWER BASIC
END OF FEB 2011 - UNBAL FP +0.5 GA +0.4 OA -0.7

	31-Jan-11	28-Feb
FORT PECK -------		
ELEV FTMSL	2235.3	2234.5
DISCH KCFS	8.9	9.0
GARRISON --------		
ELEV FTMSL	1839.9	1837.9
DISCH KCFS	23.6	26.0
OAHE ------------		
ELEV FTMSL	1605.4	1606.8
DISCH KCFS	22.5	18.7
BIG BEND --------		
ELEV FTMSL	1421.1	1420.0
DISCH KCFS	19.7	19.8
FORT RANDALL ----		
ELEV FTMSL	1345.8	1350.0
DISCH KCFS	17.3	14.8
GAVINS POINT ----		
ELEV FTMSL	1207.2	1206.0
DISCH KCFS	18.5	17.0
SYSTEM ----------		
STORAGE 1000 AF	56983	56819
ENERGY GWh	646	646
PEAK POWER MW		2318

FEB 1, 2011 - UPPER BASIC
END OF FEB 2011 - UNBAL FP +1.0 GA +1.0 OA -1.7

	31-Jan-11	28-Feb
FORT PECK -------		
ELEV FTMSL	2235.3	2235.0
DISCH KCFS	8.9	10.0
GARRISON --------		
ELEV FTMSL	1839.9	1838.5
DISCH KCFS	23.6	26.0
OAHE ------------		
ELEV FTMSL	1605.4	1605.8
DISCH KCFS	22.5	24.8
BIG BEND --------		
ELEV FTMSL	1421.1	1420.0
DISCH KCFS	19.7	26.0
FORT RANDALL ----		
ELEV FTMSL	1345.8	1350.0
DISCH KCFS	17.3	21.3
GAVINS POINT ----		
ELEV FTMSL	1207.2	1206.0
DISCH KCFS	18.5	24.0
SYSTEM ----------		
STORAGE 1000 AF	56983	56822
ENERGY GWh	777	777
PEAK POWER MW		2316

	31JAN11 INI-SUM	28FEB
--FORT PECK--		
NAT INFLOW	340	340
DEPLETION	-106	-106
EVAPORATION		
MOD INFLOW	446	446
RELEASE	555	555
STOR CHANGE	-109	-109
STORAGE	15070	14961
ELEV FTMSL	2235.3	2234.8
DISCH KCFS	8.9	10.0
POWER		
AVE POWER MW		136
PEAK POW MW		163
ENERGY GWH	91.6	91.6
--GARRISON--		
NAT INFLOW	340	340
DEPLETION	-50	-50
CHAN STOR	-11	-11
EVAPORATION		
REG INFLOW	935	935
RELEASE	1444	1444
STOR CHANGE	-509	-509
STORAGE	18860	18351
ELEV FTMSL	1839.9	1838.3
DISCH KCFS	23.6	26.0
POWER		
AVE POWER MW		325
PEAK POW MW		471
ENERGY GWH	218.5	218.5
--OAHE--		
NAT INFLOW	85	85
DEPLETION	33	33
CHAN STOR	-10	-10
EVAPORATION		
REG INFLOW	1486	1486
RELEASE	1238	1238
STOR CHANGE	249	249
STORAGE	18182	18431
ELEV FTMSL	1605.4	1606.2
DISCH KCFS	22.5	22.3
POWER		
AVE POWER MW		285
PEAK POW MW		701
ENERGY GWH	191.6	191.6
--BIG BEND--		
EVAPORATION		
REG INFLOW	1238	1238
RELEASE	1300	1300
STORAGE	1683	1621
ELEV FTMSL	1421.1	1420.0
DISCH KCFS	19.7	23.4
POWER		
AVE POWER MW		113
PEAK POW MW		529
ENERGY GWH	75.8	75.8
--FORT RANDALL--		
NAT INFLOW	45	45
DEPLETION	3	3
EVAPORATION		
REG INFLOW	1342	1342
RELEASE	1033	1033
STOR CHANGE	309	309
STORAGE	2815	3124
ELEV FTMSL	1345.8	1350.0
DISCH KCFS	17.3	18.6
POWER		
AVE POWER MW		148
PEAK POW MW		339
ENERGY GWH	99.6	99.6
--GAVINS POINT--		
NAT INFLOW	105	105
DEPLETION		
CHAN STOR	-2	-2
EVAPORATION		
REG INFLOW	1135	1135
RELEASE	1166	1166
STOR CHANGE	-31	-31
STORAGE	373	342
ELEV FTMSL	1207.2	1206.0
DISCH KCFS	18.5	21.0
POWER		
AVE POWER MW		73
PEAK POW MW		114
ENERGY GWH	49.2	49.2
--GAVINS POINT - SIOUX CITY--		
NAT INFLOW	200	200
DEPLETION	14	14
REGULATED FLOW AT SIOUX CITY		
KAF	1352	1352
KCFS		24.3
--TOTAL--		
NAT INFLOW	1115	1115
DEPLETION	-106	-106
CHAN STOR	-23	-23
EVAPORATION		
STORAGE	56983	56829
SYSTEM POWER		
AVE POWER MW		1081
PEAK POW MW		2317
ENERGY GWH	726.3	726.3
DAILY GWH		25.9

	INI-SUM	28FEB

	31JAN11	2010	2011	28FEB
	INI-SUM			
--FORT PECK--				
NAT INFLOW	272			272
DEPLETION	-56			-56
EVAPORATION				
MOD INFLOW	328			328
RELEASE	500			500
STOR CHANGE	-172			-172
STORAGE	15070			14898
ELEV FTMSL	2235.3			2234.5
DISCH KCFS	8.9			9.0
POWER				
AVE POWER MW				123
PEAK POW MW				163
ENERGY GWH	82.6			82.6
--GARRISON--				
NAT INFLOW	272			272
DEPLETION	-34			-34
CHAN STOR	-1			-1
EVAPORATION				
REG INFLOW	805			805
RELEASE	1444			1444
STOR CHANGE	-639			-639
STORAGE	18860			18221
ELEV FTMSL	1839.9			1837.9
DISCH KCFS	23.6			26.0
POWER				
AVE POWER MW				325
PEAK POW MW				469
ENERGY GWH	218.2			218.2
--OAHE--				
NAT INFLOW	68			68
DEPLETION	33			33
CHAN STOR	-10			-10
EVAPORATION				
REG INFLOW	1469			1469
RELEASE	1039			1039
STOR CHANGE	431			431
STORAGE	18182			18613
ELEV FTMSL	1605.4			1606.8
DISCH KCFS	22.5			18.7
POWER				
AVE POWER MW				240
PEAK POW MW				704
ENERGY GWH	161.2			161.2
--BIG BEND--				
EVAPORATION				
REG INFLOW	1039			1039
RELEASE	1101			1101
STORAGE	1683			1621
ELEV FTMSL	1421.1			1420.0
DISCH KCFS	19.7			19.8
POWER				
AVE POWER MW				96
PEAK POW MW				529
ENERGY GWH	64.3			64.3
--FORT RANDALL--				
NAT INFLOW	36			36
DEPLETION	3			3
EVAPORATION				
REG INFLOW	1134			1134
RELEASE	825			825
STOR CHANGE	309			309
STORAGE	2815			3124
ELEV FTMSL	1345.8			1350.0
DISCH KCFS	17.3			14.8
POWER				
AVE POWER MW				119
PEAK POW MW				339
ENERGY GWH	79.8			79.8
--GAVINS POINT--				
NAT INFLOW	84			84
DEPLETION				
CHAN STOR	5			5
EVAPORATION				
REG INFLOW	913			913
RELEASE	944			944
STOR CHANGE	-31			-31
STORAGE	373			342
ELEV FTMSL	1207.2			1206.0
DISCH KCFS	18.5			17.0
POWER				
AVE POWER MW				60
PEAK POW MW				114
ENERGY GWH	40.0			40.0
--GAVINS POINT - SIOUX CITY--				
NAT INFLOW	160			160
DEPLETION	14			14
REGULATED FLOW AT SIOUX CITY				
KAF	1090			1090
KCFS				19.6
--TOTAL--				
NAT INFLOW	892			892
DEPLETION	-40			-40
CHAN STOR	-6			-6
EVAPORATION				
STORAGE	56983			56819
SYSTEM POWER				
AVE POWER MW				961
PEAK POW MW				2318
ENERGY GWH	646.1			646.1
DAILY GWH				23.1
	INI-SUM			28FEB

31JAN11	2010	2011
INI-SUM	28FEB	
--FORT PECK--		
NAT INFLOW	408	408
DEPLETION	-89	-89
EVAPORATION		
MOD INFLOW	497	497
RELEASE	555	555
STOR CHANGE	-58	-58
STORAGE	15070	15012
ELEV FTMSL	2235.3	2235.0
DISCH KCFS	8.9	10.0
POWER		
AVE POWER MW		136
PEAK POW MW		163
ENERGY GWH	91.7	91.7
--GARRISON--		
NAT INFLOW	408	408
DEPLETION	-49	-49
CHAN STOR	-11	-11
EVAPORATION		
REG INFLOW	1002	1002
RELEASE	1444	1444
STOR CHANGE	-442	-442
STORAGE	18860	18418
ELEV FTMSL	1839.9	1838.5
DISCH KCFS	23.6	26.0
POWER		
AVE POWER MW		325
PEAK POW MW		472
ENERGY GWH	218.6	218.6
--OAHE--		
NAT INFLOW	102	102
DEPLETION	33	33
CHAN STOR	-10	-10
EVAPORATION		
REG INFLOW	1503	1503
RELEASE	1379	1379
STOR CHANGE	124	124
STORAGE	18182	18306
ELEV FTMSL	1605.4	1605.8
DISCH KCFS	22.5	24.8
POWER		
AVE POWER MW		317
PEAK POW MW		699
ENERGY GWH	213.1	213.1
--BIG BEND--		
EVAPORATION		
REG INFLOW	1379	1379
RELEASE	1441	1441
STORAGE	1683	1621
ELEV FTMSL	1421.1	1420.0
DISCH KCFS	19.7	26.0
POWER		
AVE POWER MW		125
PEAK POW MW		529
ENERGY GWH	84.0	84.0
--FORT RANDALL--		
NAT INFLOW	54	54
DEPLETION	3	3
EVAPORATION		
REG INFLOW	1492	1492
RELEASE	1183	1183
STOR CHANGE	309	309
STORAGE	2815	3124
ELEV FTMSL	1345.8	1350.0
DISCH KCFS	17.3	21.3
POWER		
AVE POWER MW		170
PEAK POW MW		339
ENERGY GWH	114.0	114.0
--GAVINS POINT--		
NAT INFLOW	126	126
DEPLETION		
CHAN STOR	-7	-7
EVAPORATION		
REG INFLOW	1302	1302
RELEASE	1333	1333
STOR CHANGE	-31	-31
STORAGE	373	342
ELEV FTMSL	1207.2	1206.0
DISCH KCFS	18.5	24.0
POWER		
AVE POWER MW		83
PEAK POW MW		114
ENERGY GWH	55.9	55.9
--GAVINS POINT - SIOUX CITY--		
NAT INFLOW	240	240
DEPLETION	14	14
REGULATED FLOW AT SIOUX CITY		
KAF	1559	1559
KCFS		28.1
--TOTAL--		
NAT INFLOW	1338	1338
DEPLETION	-88	-88
CHAN STOR	-28	-28
EVAPORATION		
STORAGE	56983	56822
SYSTEM POWER		
AVE POWER MW		1157
PEAK POW MW		2316
ENERGY GWH	777.3	777.3
DAILY GWH		27.8
INI-SUM	28FEB	

FEB 1, 2011 / BASIC CONDITION / 28.4 MAF / BALANCED
FULL SERV / SHTN NAV SEAS 0 DAYS / PULSE MAR 5.0 MAY 18.7 (CALC)
Elevations & Storages are for Date Shown
Avg Discharge & Energy are Monthly Values
Date of Study: February 1, 2011

	28-Feb-11	31-Mar	2011 30-Apr	31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	2012 31-Jan	29FEB
FORT PECK -------													
ELEV FTMSL	2234.8	2236.3	2237.5	2238.2	2240.4	2240.0	2238.0	2236.9	2236.7	2236.8	2235.7	2234.7	2234.0
DISCH KCFS	10.0	6.0	8.0	11.5	11.5	11.5	11.5	8.8	6.0	6.0	10.5	11.0	11.0
GARRISON --------													
ELEV FTMSL	1838.3	1840.6	1842.3	1842.9	1845.6	1845.8	1843.8	1842.6	1841.7	1841.2	1840.4	1838.8	1837.5
DISCH KCFS	26.0	18.0	22.0	25.5	29.5	29.5	29.5	23.7	18.0	18.0	19.0	25.0	25.0
OAHE ------------													
ELEV FTMSL	1606.2	1608.2	1610.9	1611.7	1613.1	1613.1	1612.1	1610.5	1609.4	1607.7	1606.7	1606.9	1607.5
DISCH KCFS	22.3	21.9	20.7	25.9	26.7	29.7	32.2	32.2	23.9	26.6	22.5	23.7	22.7
BIG BEND --------													
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	23.4	21.9	20.7	25.9	26.7	29.6	31.9	31.7	23.6	26.3	22.4	23.7	22.7
FORT RANDALL ----													
ELEV FTMSL	1350.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	18.6	18.7	23.2	28.1	29.0	30.1	31.9	34.2	33.7	33.8	20.7	18.3	17.0
GAVINS POINT ----													
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	22.6	26.7	30.7	31.6	31.6	33.2	35.5	35.5	35.5	22.5	20.0	20.0
SYSTEM ----------													
STORAGE 1000 AF	56829	58908	60621	61258	63153	63115	61635	60360	59025	57862	57177	56851	56832
ENERGY GWh	10522	691	751	953	980	1062	1106	1006	837	830	754	811	742
PEAK POWER MW		2334	2359	2373	2384	2383	2376	2367	2339	2294	2255	2275	2282

FEB 1, 2011 / LOWER BASIC / 19.2 MAF / BALANCED
FULL SERV / SHTN NAV SEAS 0 DAYS / PULSE MAR 5.0 MAY 12.0 (CALC)

	28-Feb-11	31-Mar	2011 30-Apr	31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	2012 31-Jan	29FEB
FORT PECK -------													
ELEV FTMSL	2234.5	2234.8	2235.0	2234.2	2234.3	2232.7	2230.5	2229.4	2229.0	2228.5	2226.8	2225.2	2224.0
DISCH KCFS	9.0	6.0	7.0	11.0	10.0	10.0	10.0	7.9	6.0	6.0	10.0	10.0	10.0
GARRISON --------													
ELEV FTMSL	1837.9	1838.9	1839.7	1839.9	1840.8	1839.9	1838.0	1836.8	1835.7	1835.0	1833.6	1831.1	1829.1
DISCH KCFS	26.0	16.0	17.5	20.0	24.0	24.0	24.0	20.0	16.0	16.1	19.0	25.0	25.0
OAHE ------------													
ELEV FTMSL	1606.8	1607.0	1607.1	1605.3	1604.2	1601.8	1599.1	1596.6	1595.0	1594.0	1595.1	1596.9	1599.0
DISCH KCFS	18.7	23.7	25.9	31.3	31.6	33.7	33.6	30.8	22.1	19.5	13.2	16.6	15.9
BIG BEND --------													
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	19.8	23.7	25.9	31.3	31.6	33.6	33.2	30.3	21.7	19.1	13.0	16.6	15.9
FORT RANDALL ----													
ELEV FTMSL	1350.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	14.8	19.2	27.5	32.5	32.9	33.7	33.0	32.5	31.7	26.5	11.3	11.2	10.0
GAVINS POINT ----													
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	17.0	21.4	29.8	33.9	34.3	34.3	34.0	33.5	33.1	28.2	12.5	12.5	12.5
SYSTEM ----------													
STORAGE 1000 AF	56819	57703	58023	57369	57368	56038	54235	52809	51347	50319	49956	49798	49905
ENERGY GWh	9600	694	794	989	990	1050	1038	905	757	650	534	629	572
PEAK POWER MW		2321	2324	2315	2313	2296	2274	2260	2237	2196	2164	2188	2199

FEB 1, 2011 / UPPER BASIC / 38.6 MAF / BALANCED
FULL SERV / SHTN NAV SEAS 0 DAYS / PULSE MAR 5.0 MAY 20.0 (CALC)

	28-Feb-11	31-Mar	2011 30-Apr	31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	2012 31-Jan	29FEB
FORT PECK -------													
ELEV FTMSL	2235.0	2236.9	2239.5	2241.7	2247.8	2248.4	2245.8	2243.4	2240.9	2238.6	2236.8	2235.2	2234.0
DISCH KCFS	10.0	8.0	8.0	13.5	13.5	13.5	17.0	17.1	17.0	17.0	14.0	14.0	14.0
GARRISON --------													
ELEV FTMSL	1838.5	1842.6	1845.1	1844.9	1850.4	1851.0	1848.4	1846.0	1843.2	1841.0	1840.7	1838.9	1837.5
DISCH KCFS	26.0	18.0	26.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	22.0	30.0	30.0
OAHE ------------													
ELEV FTMSL	1605.8	1609.3	1612.9	1614.3	1615.5	1613.5	1610.7	1608.6	1608.0	1607.0	1606.1	1606.5	1607.5
DISCH KCFS	24.8	19.1	24.1	40.4	43.9	53.4	54.8	52.3	44.3	46.7	27.1	27.2	26.1
BIG BEND --------													
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	26.0	19.1	24.1	40.4	43.9	53.3	54.5	52.0	44.0	46.6	27.0	27.2	26.1
FORT RANDALL ----													
ELEV FTMSL	1350.0	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	21.3	17.1	27.5	43.6	47.7	54.2	54.7	54.7	54.3	54.3	25.4	22.0	20.6
GAVINS POINT ----													
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	24.0	22.6	32.0	47.0	52.0	56.5	56.5	56.5	56.5	56.5	28.0	24.0	24.0
SYSTEM ----------													
STORAGE 1000 AF	56822	60054	62666	63596	67419	67108	64566	62350	60005	57960	57297	56867	56809
ENERGY GWh	14340	665	871	1373	1388	1551	1557	1472	1414	1361	885	942	861
PEAK POWER MW		2355	2381	2388	2402	2391	2374	2364	2346	2287	2254	2274	2282

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB11		2011											2012			
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--																	
NAT INFLOW	7571	300	140	180	757	1148	1720	871	353	333	385	192	90	102	329	312	360
DEPLETION	418	-36	-17	-21	25	298	525	234	11	-75	-42	-41	-19	-22	-132	-153	-118
EVAPORATION	466							29	90	112	97	44	20	23	51		
MOD INFLOW	6687	335	156	201	732	850	1195	608	252	296	330	189	88	101	410	465	478
RELEASE	6856	179	83	107	476	707	684	707	707	525	369	179	83	95	646	676	633
STOR CHANGE	-169	157	73	94	256	143	511	-99	-455	-228	-39	10	5	5	-235	-211	-155
STORAGE	14961	15118	15191	15285	15541	15684	16194	16095	15640	15412	15373	15383	15388	15393	15158	14946	14792
ELEV FTMSL	2234.8	2235.5	2235.9	2236.3	2237.5	2238.2	2240.4	2240.0	2238.0	2236.9	2236.7	2236.8	2236.8	2236.8	2236.8	2235.7	2234.7	2234.0
DISCH KCFS	10.0	6.0	6.0	6.0	8.0	11.5	11.5	11.5	11.5	8.8	6.0	6.0	6.0	6.0	10.5	11.0	11.0
POWER																	
AVE POWER MW		82	82	82	110	156	157	157	156	121	83	83	83	83	143	148	148
PEAK POW MW		163	164	164	165	165	167	167	165	164	164	164	164	164	163	163	162
ENERGY GWH	1130.1	29.6	13.8	17.8	79.2	115.8	112.8	117.0	116.4	87.4	61.4	29.7	13.9	15.9	106.3	110.3	102.8
--GARRISON--																	
NAT INFLOW	11549	692	323	415	1430	1275	2743	1830	604	452	523	199	93	106	247	261	356
DEPLETION	989	4	2	3	-3	177	765	602	107	-142	-25	-121	-56	-65	-115	-87	-57
CHAN STOR	-10	40			-20	-34				26	27				-44	-5	
EVAPORATION	542							34	106	131	113	51	24	27	58		
REG INFLOW	16864	906	404	520	1889	1771	2662	1901	1098	1014	831	448	209	239	906	1019	1046
RELEASE	17100	536	250	321	1309	1568	1755	1814	1814	1412	1107	536	250	286	1168	1537	1438
STOR CHANGE	-236	370	154	198	580	203	907	87	-716	-398	-275	-88	-41	-47	-262	-518	-392
STORAGE	18351	18721	18875	19073	19654	19857	20764	20851	20136	19738	19462	19375	19334	19287	19025	18507	18115
ELEV FTMSL	1838.3	1839.5	1839.9	1840.6	1842.3	1842.9	1845.6	1845.8	1843.8	1842.6	1841.7	1841.5	1841.4	1841.2	1840.4	1838.8	1837.5
DISCH KCFS	26.0	18.0	18.0	18.0	22.0	25.5	29.5	29.5	29.5	23.7	18.0	18.0	18.0	18.0	19.0	25.0	25.0
POWER																	
AVE POWER MW		226	227	227	278	324	378	381	379	303	229	228	228	228	240	314	311
PEAK POW MW		475	477	479	489	498	500	500	499	494	483	482	482	481	478	473	468
ENERGY GWH	2628.0	81.2	38.1	49.1	200.4	241.2	271.9	283.1	281.7	218.0	170.4	82.2	38.3	43.8	178.8	233.3	216.4
--OAHE--																	
NAT INFLOW	3203	419	195	251	866	400	470	190	65	111	66	34	16	18		12	90
DEPLETION	681	24	11	14	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	4	32			-16	-13	-15			22	22				-4	-24	
EVAPORATION	534							33	105	130	111	50	23	26	56		
REG INFLOW	19092	963	434	558	2110	1884	2065	1798	1658	1386	1093	518	242	277	1097	1507	1500
RELEASE	18683	649	304	396	1234	1592	1588	1824	1980	1914	1471	702	361	519	1386	1454	1308
STOR CHANGE	409	315	130	162	877	291	477	-27	-322	-527	-378	-184	-119	-243	-290	53	192
STORAGE	18431	18745	18875	19038	19915	20206	20683	20657	20334	19807	19430	19246	19127	18884	18595	18648	18840
ELEV FTMSL	1606.2	1607.2	1607.6	1608.2	1610.9	1611.7	1613.1	1613.1	1612.1	1610.5	1609.4	1608.8	1608.4	1607.7	1606.7	1606.9	1607.5
DISCH KCFS	22.3	21.8	21.9	22.2	20.7	25.9	26.7	29.7	32.2	32.2	23.9	23.6	26.0	32.7	22.5	23.7	22.7
POWER																	
AVE POWER MW		280	283	287	271	340	353	393	425	422	313	307	337	422	291	304	293
PEAK POW MW		706	708	711	726	730	737	737	732	724	718	715	713	709	704	705	708
ENERGY GWH	2952.5	100.9	47.5	62.0	194.8	253.3	254.0	292.5	316.4	303.8	232.6	110.5	56.6	81.1	216.2	226.2	204.0
--BIG BEND--																	
EVAPORATION	103							6	20	25	22	10	5	5	11		
REG INFLOW	18579	649	304	396	1234	1592	1588	1818	1961	1889	1449	692	356	514	1375	1454	1308
RELEASE	18579	649	304	396	1234	1592	1588	1818	1961	1889	1449	692	356	514	1375	1454	1308
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	23.4	21.8	21.9	22.2	20.7	25.9	26.7	29.6	31.9	31.7	23.6	23.3	25.7	32.4	22.4	23.7	22.7
POWER																	
AVE POWER MW		103	103	104	97	121	125	138	149	150	115	117	128	161	112	116	109
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	1074.9	37.2	17.2	22.4	69.9	90.2	89.9	103.0	111.0	108.3	85.9	42.0	21.6	31.0	83.4	86.2	75.8
--FORT RANDALL--																	
NAT INFLOW	910	110	51	66	152	147	152	57	39	38	5	3	1	2	12	25	49
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	117							8	25	31	25	9	4	4	10		
REG INFLOW	19293	757	355	461	1382	1730	1728	1849	1959	1888	1429	685	353	510	1375	1476	1354
RELEASE	19294	466	221	461	1382	1730	1728	1849	1959	2034	2072	1006	469	536	1273	1126	980
STOR CHANGE	-1	291	134					0	0	-146	-643	-321	-116	-26	102	350	374
STORAGE	3124	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2399	2749	3123
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	18.6	15.7	15.9	25.8	23.2	28.1	29.0	30.1	31.9	34.2	33.7	33.8	33.8	33.8	20.7	18.3	17.0
POWER																	
AVE POWER MW		130	134	218	196	237	245	253	268	285	269	255	247	244	151	139	135
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1893.6	46.6	22.6	47.1	141.3	176.4	176.1	188.3	199.4	205.3	200.3	91.7	41.4	46.8	112.7	103.2	94.3
--GAVINS POINT--																	
NAT INFLOW	1755	122	57	73	207	186	178	137	115	111	120	59	28	31	100	100	130
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	2	6	0	-19	5	-9	-2	-2	-3	-4	1	0	0	0	24	4	2
EVAPORATION	36							2	6	9	8	3	2	2	4		
REG INFLOW	20901	595	278	516	1589	1888	1880	1943	2054	2137	2183	1056	493	563	1383	1230	1112
RELEASE	20901	595	278	516	1589	1888	1880	1943	2041	2112	2183	1056	493	563	1383	1230	1150
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	21.0	20.0	20.0	28.9	26.7	30.7	31.6	31.6	33.2	35.5	35.5	35.5	35.5	35.5	22.5	20.0	20.0
POWER																	
AVE POWER MW		69	69	98	91	103	105	105	109	115	116	116	116	116	76	70	69
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	843.0	24.8	11.6	21.2	65.6	76.3	75.3	77.8	80.9	82.8	86.3	41.7	19.5	22.3	56.7	52.0	48.3
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	2805	287	134	172	594	400	350	250	150	110	86	42	19	22	56	40	92
DEPLETION	266	7	3	4	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY																	
KAF	23440	876	409	684	2161	2252	2199	2154	2155	2198	2258	1092	509	582	1426	1256	1228
KCFS		29.4	29.4	38.3	36.3	36.6	37.0	35.0	35.1	36.9	36.7	36.7	36.7	36.7	23.2	20.4	21.4
--TOTAL--																	
NAT INFLOW	27793	1931	901	1158	4006	3556	5613	3335	1326	1155	1185	528	246	282	744	750	1077
DEPLETION	2548	0	0	0	102	610	1502	1105	295	-163	-63	-149	-69	-79	-209	-204	-130
CHAN STOR	-4	77	0	-19	-30	-57	-17	-2	-3	43	50	0	0	-1	-23	-24	2
EVAPORATION	1798							112	352	437	375	167	77	88	189		
STORAGE	56829	57962	58453	58908	60621	61258	63153	63115	61635	60360	59025	58443	58172	57862	57177	56851	56832
SYSTEM POWER																	
AVE POWER MW		890	898	1017	1043	1281	1361	1427	1486	1397	1125	1105	1139	1254	1013	1091	1066
PEAK POW MW		2327	2329	2334	2359	2373	2384	2383	2376	2367	2339	2313	2301	2294	2255	2275	2282
ENERGY GWH	10522.2	320.3	150.8	219.7	751.2	953.2	980.1	1061.7	1105.8	1005.6	836.9	397.9	191.3	240.8	754.0	811.4	741.6
DAILY GWH		21.4	21.5	24.4	25.0	30.7	32.7	34.2	35.7	33.5	27.0	26.5	27.3	30.1	24.3	26.2	25.6

VALUES IN 1000 AF EXCEPT AS INDICATED

	28FEB11		2011										2012				
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--																	
NAT INFLOW	5102	195	91	117	492	689	1032	523	282	266	308	154	72	82	263	250	288
DEPLETION	373	-17	-8	-10	38	195	405	219	1	-108	-90	-24	-11	-13	-80	-69	-55
EVAPORATION	533							33	104	128	111	50	23	27	57		
MOD INFLOW	4196	212	99	127	454	494	627	271	177	246	287	127	60	68	286	319	343
RELEASE	6290	179	83	107	417	676	595	615	615	472	369	179	83	95	615	615	575
STOR CHANGE	-2094	33	15	20	37	-182	32	-344	-437	-226	-82	-51	-24	-27	-329	-296	-232
STORAGE	14898	14931	14946	14966	15004	14821	14853	14509	14071	13845	13763	13712	13688	13661	13332	13036	12804
ELEV FTMSL	2234.5	2234.7	2234.7	2234.8	2235.0	2234.2	2234.3	2232.7	2230.5	2229.4	2229.0	2228.7	2228.6	2228.5	2226.8	2225.2	2224.0
DISCH KCFS	9.0	6.0	6.0	6.0	7.0	11.0	10.0	10.0	10.0	7.9	6.0	6.0	6.0	6.0	10.0	10.0	10.0
POWER																	
AVE POWER MW		82	82	82	96	148	136	136	135	107	81	81	81	80	133	133	132
PEAK POW MW		163	163	163	163	162	162	161	160	159	159	158	158	158	157	156	154
ENERGY GWH	1023.6	29.5	13.8	17.7	68.9	110.0	97.9	101.0	100.4	76.9	60.0	29.0	13.5	15.5	99.1	98.6	91.7
--GARRISON--																	
NAT INFLOW	7642	450	210	270	930	765	1646	1098	483	362	418	159	74	85	198	209	285
DEPLETION	933	15	7	9	21	111	524	493	111	-107	20	-93	-43	-50	-52	-22	-12
CHAN STOR	-10	30			-10	-39	10			20	19				-40		
EVAPORATION	622							40	122	150	129	58	27	31	66		
REG INFLOW	12367	643	286	368	1316	1291	1727	1180	865	811	657	373	174	199	759	846	872
RELEASE	14912	476	222	286	1041	1230	1428	1476	1476	1190	984	476	222	262	1168	1537	1438
STOR CHANGE	-2545	167	64	82	274	61	299	-295	-611	-378	-327	-103	-48	-63	-409	-691	-566
STORAGE	18221	18388	18452	18534	18808	18869	19168	18873	18262	17883	17557	17453	17405	17342	16933	16242	15676
ELEV FTMSL	1837.9	1838.4	1838.6	1838.9	1839.7	1839.9	1840.8	1839.9	1838.0	1836.8	1835.7	1835.3	1835.2	1835.0	1833.6	1831.1	1829.1
DISCH KCFS	26.0	16.0	16.0	16.0	17.5	20.0	24.0	24.0	24.0	20.0	16.0	16.0	16.0	16.5	19.0	25.0	25.0
POWER																	
AVE POWER MW		200	200	201	220	252	303	303	300	248	198	197	196	202	231	300	295
PEAK POW MW		471	472	473	476	477	480	477	470	465	461	460	460	459	454	445	437
ENERGY GWH	2230.2	71.9	33.7	43.3	158.4	187.4	217.9	225.2	223.3	178.6	147.0	70.8	33.0	38.8	172.1	223.0	205.6
--OAHE--																	
NAT INFLOW	2092	272	127	163	563	240	282	114	52	89	53	27	13	14		10	72
DEPLETION	681	24	11	14	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	2	40			-6	-10	-16			17	18			-2	-11	-27	
EVAPORATION	552							36	110	134	113	51	23	27	58		
REG INFLOW	15773	765	338	435	1549	1389	1549	1381	1302	1134	951	451	211	247	1086	1502	1482
RELEASE	18047	646	300	513	1541	1922	1880	2072	2069	1835	1361	589	310	259	814	1023	913
STOR CHANGE	-2274	119	38	-79	8	-533	-331	-691	-767	-701	-410	-138	-99	-12	272	480	569
STORAGE	18613	18732	18770	18691	18699	18166	17835	17144	16377	15676	15266	15129	15030	15018	15290	15770	16339
ELEV FTMSL	1606.8	1607.2	1607.3	1607.0	1607.1	1605.3	1604.2	1601.8	1599.1	1596.6	1595.0	1594.5	1594.1	1594.0	1595.1	1596.9	1599.0
DISCH KCFS	18.7	21.7	21.6	28.8	25.9	31.3	31.6	33.7	33.6	30.8	22.1	19.8	22.3	16.3	13.2	16.6	15.9
POWER																	
AVE POWER MW		279	279	370	333	399	401	423	416	376	268	238	268	196	160	202	195
PEAK POW MW		706	707	705	706	696	690	678	664	651	643	641	639	639	644	653	663
ENERGY GWH	2720.7	100.6	46.9	79.9	239.9	297.2	288.4	314.6	309.7	271.0	199.4	85.9	45.0	37.6	118.9	150.2	135.6
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	17918	646	300	513	1541	1922	1880	2064	2044	1804	1334	577	304	252	800	1023	913
RELEASE	17918	646	300	513	1541	1922	1880	2064	2044	1804	1334	577	304	252	800	1023	913
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	19.8	21.7	21.6	28.8	25.9	31.3	31.6	33.6	33.2	30.3	21.7	19.4	21.9	15.9	13.0	16.6	15.9
POWER																	
AVE POWER MW		103	101	135	121	146	148	157	156	144	106	97	110	80	66	82	76
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	1032.5	37.0	17.0	29.1	87.3	108.8	106.4	116.9	115.7	103.5	79.1	35.1	18.5	15.4	48.9	60.8	53.0
--FORT RANDALL--																	
NAT INFLOW	599	72	33	43	99	88	91	34	31	30	4	3	1	1	10	20	39
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	146							10	32	39	31	12	5	5	12		
REG INFLOW	18291	716	333	556	1636	2001	1959	2070	2028	1788	1306	566	300	248	795	1040	949
RELEASE	18291	425	199	556	1636	2001	1959	2070	2028	1934	1949	887	416	274	692	690	575
STOR CHANGE	0	291	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3124	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	14.8	14.3	14.3	31.1	27.5	32.5	32.9	33.7	33.0	32.5	31.7	29.8	30.0	17.3	11.3	11.2	10.0
POWER																	
AVE POWER MW		118	121	262	232	274	277	283	277	271	254	225	219	126	83	85	80
PEAK POW MW		351	356	356	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1812.8	42.5	20.3	56.6	166.9	203.6	199.2	210.4	206.3	195.4	188.7	81.0	36.8	24.2	61.8	63.6	55.6
--GAVINS POINT--																	
NAT INFLOW	1235	79	37	48	135	112	107	82	92	89	96	47	22	25	80	80	104
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	8	1	0	-32	7	-10	-1	-1	1	1	1	3	0	24	11	0	2
EVAPORATION	45							3	8	11	10	4	2	2	5		
REG INFLOW	19375	506	236	571	1773	2084	2041	2109	2104	2018	2035	928	433	317	769	769	681
RELEASE	19375	506	236	571	1773	2084	2041	2109	2091	1993	2035	928	433	317	769	769	719
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	17.0	17.0	17.0	32.0	29.8	33.9	34.3	34.3	34.0	33.5	33.1	31.2	31.2	20.0	12.5	12.5	12.5
POWER																	
AVE POWER MW		59	59	106	100	110	111	111	110	111	111	107	107	71	44	44	44
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	780.6	21.2	9.9	22.8	72.3	81.6	79.6	82.2	82.1	79.8	82.5	38.3	17.9	13.5	33.0	33.0	30.7
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	1865	187	87	112	386	240	210	150	120	87	69	33	15	18	45	32	74
DEPLETION	266	7	3	4	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY																	
KAF	20974	686	320	679	2137	2288	2220	2220	2175	2056	2093	955	446	332	801	787	779
KCFS		23.0	23.1	38.0	35.9	37.2	37.3	36.1	35.4	34.6	34.0	32.1	32.1	20.9	13.0	12.8	13.5
--TOTAL--																	
NAT INFLOW	18535	1255	585	753	2605	2134	3368	2001	1060	923	948	422	197	225	596	601	862
DEPLETION	2447	30	14	18	139	441	1141	981	289	-161	-66	-104	-49	-55	-94	-55	-22
CHAN STOR	0	71	0	-32	-9	-59	-7	-1	1	39	39	3	0	22	-40	-27	2
EVAPORATION	2027							129	400	493	421	187	86	98	213		
STORAGE	56819	57429	57680	57703	58023	57369	57368	56038	54235	52809	51347	50734	50447	50319	49956	49798	49905
SYSTEM POWER																	
AVE POWER MW		841	843	1155	1102	1329	1374	1412	1395	1257	1017	945	980	755	717	846	822
PEAK POW MW		2322	2321	2321	2324	2315	2313	2296	2274	2260	2237	2210	2199	2196	2164	2188	2199
ENERGY GWH	9600.3	302.8	141.6	249.4	793.7	988.6	989.5	1050.3	1037.6	905.2	756.7	340.1	164.7	144.9	533.8	629.3	572.2
DAILY GWH		20.2	20.2	27.7	26.5	31.9	33.0	33.9	33.5	30.2	24.4	22.7	23.5	18.1	17.2	20.3	19.7
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB

TIME OF STUDY 11:01:27 FULLS SERV / SHTN NAV SEAS 0 DAYS / PULSE MAR 5.0 MAY 20.0 (CALC) STUDY NO 5

VALUES IN 1000 AF EXCEPT AS INDICATED

28FEB11		2011									2012				
	INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--																	
NAT INFLOW	10384	405	189	243	1022	1607	2752	1219	424	400	462	231	108	123	395	374	432
DEPLETION	191	-24	-11	-14	-23	260	513	204	-62	-129	-89	-30	-14	-16	-123	-146	-105
EVAPORATION	340							23	73	91	78	18	8	9	39		
MOD INFLOW	9853	428	200	257	1045	1347	2239	992	413	438	473	242	113	129	479	520	537
RELEASE	10080	238	111	143	476	830	803	830	1045	1020	1045	506	236	270	861	861	805
STOR CHANGE	-227	190	89	114	569	517	1436	162	-633	-582	-572	-263	-123	-140	-381	-341	-268
STORAGE	15012	15202	15291	15405	15974	16491	17926	18088	17455	16873	16302	16038	15915	15775	15394	15053	14785
ELEV FTMSL	2235.0	2235.9	2236.4	2236.9	2239.5	2241.7	2247.8	2248.4	2245.8	2243.4	2240.9	2239.7	2239.2	2238.6	2236.8	2235.2	2234.0
DISCH KCFS	10.0	8.0	8.0	8.0	8.0	13.5	13.5	13.5	17.0	17.1	17.0	17.0	17.0	17.0	14.0	14.0	14.0
POWER																	
AVE POWER MW		110	110	110	110	167	170	172	171	170	168	166	166	165	165	164	162
PEAK POW MW		164	164	164	166	168	172	173	170	169	167	166	166	165	164	163	162
ENERGY GWH	1387.2	39.4	18.4	23.7	79.5	124.2	122.4	128.3	127.5	122.1	124.8	59.9	27.8	31.7	122.6	121.7	113.1
--GARRISON--																	
NAT INFLOW	16007	935	436	560	1931	1785	4389	2562	725	542	628	239	112	127	296	313	427
DEPLETION	997	4	2	3	18	100	802	621	93	-133		-118	-55	-63	-117	-96	-64
CHAN STOR	-36	20				-53			-33	-1	1	0			29		
EVAPORATION	386							27	84	104	88	20	9	11	44		
REG INFLOW	24668	1188	545	701	2389	2462	4390	2744	1560	1590	1587	842	393	450	1260	1270	1296
RELEASE	24979	536	250	321	1547	2521	2440	2521	2521	2438	2521	1220	569	651	1353	1845	1726
STOR CHANGE	-311	652	295	379	842	-59	1951	223	-961	-848	-934	-377	-176	-201	-93	-575	-429
STORAGE	18418	19070	19365	19744	20586	20528	22478	22702	21741	20893	19958	19581	19405	19204	19111	18536	18107
ELEV FTMSL	1838.5	1840.5	1841.4	1842.6	1845.1	1844.9	1850.4	1851.0	1848.4	1846.0	1843.2	1842.1	1841.6	1841.0	1840.7	1838.9	1837.5
DISCH KCFS	26.0	18.0	18.0	18.0	26.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	22.0	30.0	30.0
POWER																	
AVE POWER MW		227	228	229	333	500	502	504	503	501	499	494	484	482	278	376	372
PEAK POW MW		479	482	494	500	499	504	504	502	500	498	486	483	481	480	473	468
ENERGY GWH	3720.7	81.6	38.3	49.4	239.5	371.7	361.2	375.0	374.4	360.9	371.4	177.9	81.3	92.5	206.9	279.7	259.1
--OAHE--																	
NAT INFLOW	4408	566	264	339	1169	560	752	266	78	133	79	40	19	21		14	108
DEPLETION	681	24	11	14	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	-11	32			-31	-56				0	0				76	-32	
EVAPORATION	362							26	79	96	82	19	9	10	42		
REG INFLOW	28333	1110	503	646	2636	2954	3047	2588	2404	2448	2528	1240	578	661	1375	1808	1806
RELEASE	27808	558	267	347	1435	2483	2610	3284	3367	3113	2724	1301	641	839	1666	1673	1502
STOR CHANGE	525	552	236	300	1201	471	436	-695	-962	-665	-196	-61	-62	-178	-291	135	304
STORAGE	18306	18858	19094	19393	20594	21066	21502	20807	19845	19180	18984	18923	18861	18683	18392	18527	18831
ELEV FTMSL	1605.8	1607.6	1608.3	1609.3	1612.9	1614.3	1615.5	1613.5	1610.7	1608.6	1608.0	1607.8	1607.6	1607.0	1606.1	1606.5	1607.5
DISCH KCFS	24.8	18.8	19.2	19.4	24.1	40.4	43.9	53.4	54.8	52.3	44.3	43.7	46.1	52.9	27.1	27.2	26.1
POWER																	
AVE POWER MW		241	249	253	317	534	584	694	697	662	570	561	591	660	347	348	336
PEAK POW MW		708	712	717	736	743	749	739	724	714	710	709	708	705	700	703	708
ENERGY GWH	4345.0	86.9	41.8	54.6	228.1	397.6	420.4	516.2	518.9	476.8	424.1	202.1	99.4	126.6	258.5	259.2	233.7
--BIG BEND--																	
EVAPORATION	71							5	15	19	16	4	2	2	9		
REG INFLOW	27737	558	267	347	1435	2483	2610	3279	3352	3094	2708	1297	639	837	1658	1673	1502
RELEASE	27737	558	267	347	1435	2483	2610	3279	3352	3094	2708	1297	639	837	1658	1673	1502
STORAGE	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	26.0	18.8	19.2	19.4	24.1	40.4	43.9	53.3	54.5	52.0	44.0	43.6	46.0	52.8	27.0	27.2	26.1
POWER																	
AVE POWER MW		89	90	91	113	189	205	249	255	246	213	215	227	259	135	133	125
PEAK POW MW		517	509	509	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	1598.5	32.0	15.1	19.6	81.3	140.5	147.7	185.4	189.5	176.9	158.8	77.5	38.1	49.8	100.2	99.0	87.0
--FORT RANDALL--																	
NAT INFLOW	1251	149	70	89	205	206	243	80	47	46	6	4	2	2	14	30	59
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	81							6	19	24	18	4	2	2	7		
REG INFLOW	28830	706	335	435	1636	2680	2841	3335	3365	3109	2694	1295	638	836	1664	1700	1558
RELEASE	28830	415	201	435	1636	2680	2841	3335	3365	3255	3337	1617	754	862	1561	1350	1184
STOR CHANGE	0	291	134					0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3124	3415	3549	3549	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1350.0	1353.6	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	21.3	13.9	14.5	24.4	27.5	43.6	47.7	54.2	54.7	54.7	54.3	54.3	54.3	54.3	25.4	22.0	20.6
POWER																	
AVE POWER MW		115	123	206	232	343	356	355	355	352	335	306	290	284	185	166	163
PEAK POW MW		351	356	356	356	356	356	355	355	349	317	294	285	283	294	319	339
ENERGY GWH	2404.3	41.5	20.6	44.5	166.9	254.9	256.4	264.2	264.1	253.5	249.4	110.2	48.7	54.6	137.8	123.5	113.6
--GAVINS POINT--																	
NAT INFLOW	2311	166	77	99	279	260	285	192	138	133	144	71	33	38	120	120	156
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	-1	14	-1	-19	-6	-31	-8	-12	-1	0	1	0	0	0	54	6	3
EVAPORATION	24							2	5	6	6	1	1	1	3		
REG INFLOW	31001	595	278	516	1904	2890	3094	3474	3487	3387	3474	1681	784	897	1722	1476	1343
RELEASE	31001	595	278	516	1904	2890	3094	3474	3474	3362	3474	1681	784	897	1722	1476	1381
STOR CHANGE									13	25							-38
STORAGE	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342
ELEV FTMSL	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	24.0	20.0	20.0	28.9	32.0	47.0	52.0	56.5	56.5	56.5	56.5	56.5	56.5	56.5	28.0	24.0	24.0
POWER																	
AVE POWER MW		69	69	98	106	112	111	110	111	114	115	115	115	115	79	79	78
PEAK POW MW		114	114	114	114	112	111	110	112	115	115	115	115	115	78	78	76
ENERGY GWH	884.5	24.8	11.6	21.2	76.0	83.7	80.2	82.2	82.9	82.1	85.4	41.3	19.3	22.0	58.5	58.7	54.5
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	3814	388	181	233	802	560	560	350	180	132	103	50	23	27	67	48	110
DEPLETION	266	7	3	4	22	36	31	39	36	24	11	6	3	3	13	14	14
REGULATED FLOW AT SIOUX CITY																	
KAF	34549	976	456	745	2684	3414	3623	3785	3618	3470	3566	1725	805	920	1776	1510	1477
KCFS		32.8	32.8	41.7	45.1	55.5	60.9	61.6	58.8	58.3	58.0	58.0	58.0	58.0	28.9	24.6	25.7
--TOTAL--																	
NAT INFLOW	38175	2608	1216	1564	5408	4978	8981	4669	1592	1386	1422	634	296	338	892	899	1292
DEPLETION	2329	12	6	7	75	495	1527	1094	208	-208	-85	-135	-63	-72	-202	-206	-124
CHAN STOR	-46	66	-1	-19	-37	-140	-8	-12	-34	-1	2	0	0	-1	161	-26	3
EVAPORATION	1264							88	275	338	288	67	31	35	143		
STORAGE	56822	58508	59262	60054	62666	63596	67419	67108	64566	62350	60005	58982	58505	57960	57297	56867	56809
SYSTEM POWER																	
AVE POWER MW		851	868	987	1210	1845	1928	2085	2093	2045	1901	1858	1873	1965	1189	1266	1237
PEAK POW MW		2333	2338	2355	2381	2388	2402	2391	2374	2364	2346	2309	2295	2287	2254	2274	2282
ENERGY GWH	14340.2	306.3	145.8	213.1	871.2	1372.6	1388.2	1551.2	1557.2	1472.3	1414.0	669.0	314.7	377.3	884.5	941.8	860.9
DAILY GWH		20.4	20.8	23.7	29.0	44.3	46.3	50.0	50.2	49.1	45.6	44.6	45.0	47.2	28.5	30.4	29.7

[redacted] NWO

From: [redacted] NWO
Sent: Thursday, February 03, 2011 6:29 PM
To: DLL-CENWO-EOC CMT-ALL
Subject: INFO: NE Ice Dusting Recommendation and NWS Predictions for the James, Big Sioux, Vermillion, Floyd, and Little Sioux Rivers (UNCLASSIFIED)
Attachments: NE Ice Dusting Recommendation 2011.pdf; 2011 NWS Flood Projections2.xlsx

Classification: UNCLASSIFIED
Caveats: FOUO

All,

FYI. Please find attached the ice dusting location recommendation for the State of NE prepared by Hydro Engineering Branch. Also attached is a good overview of the National Weather Service Flood Projections on the James, Big Sioux, Vermillion, Floyd, and Little Sioux Rivers. On the right side of the sheet you will see the peak stages from 1997, 2009, and 2010 to compare with what the NWS is forecasting. The majority of the stations in the spreadsheet have a 90% chance of exceeding flood stage (see the orange highlight). Hydro Branch is working up the other areas in the District as well and we should have those shortly.

Thanks,
[redacted]

[redacted]
Chief, Readiness Branch
U.S. Army Corps of Engineers - Omaha District
1616 Capitol Ave., Ste 9000
Omaha, NE 68102
[redacted] Office
[redacted] Blackberry
[redacted]@usace.army.mil

Classification: UNCLASSIFIED
Caveats: FOUO

Assessment of State of Nebraska Request for Technical Assistance, 3 February 2011

1. This office has reviewed meteorologic data for this winter and has concluded that there is a moderate to high probability for ice jam related flooding along the lower Platte River and its tributaries this spring. As part of that assessment, this office is recommending that the State of Nebraska conduct ice dusting operations at up to 9 sites along the Platte River between the Interstate 80 crossing and North Bend, Nebraska, as shown in the following figure:

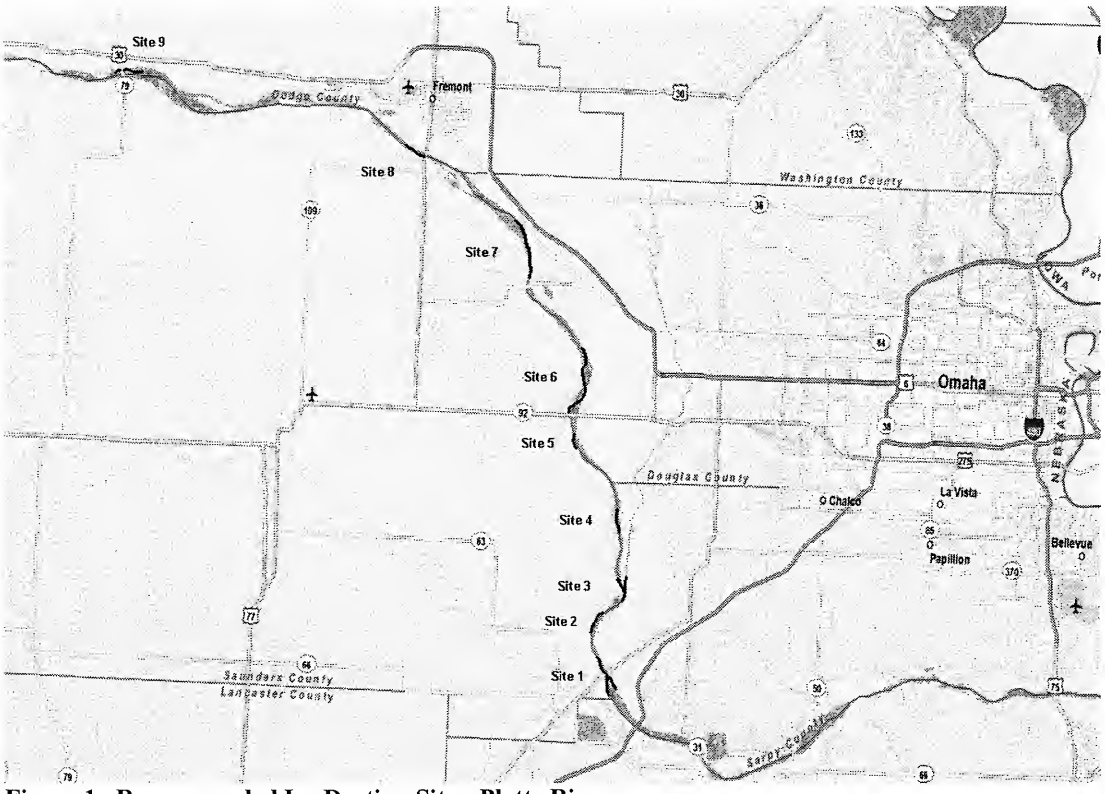


Figure 1. Recommended Ice Dusting Sites, Platte River

The sites are described as follows:

> **Site 1:** Two strips totaling approximately 12,600 feet in length upstream and downstream of the Highway 6 Bridge along main flow channels on either side of the river. Historically, ice jams in this reach have caused damage to Linoma Beach, Willow Point, Beacon View and Camp Ashland.

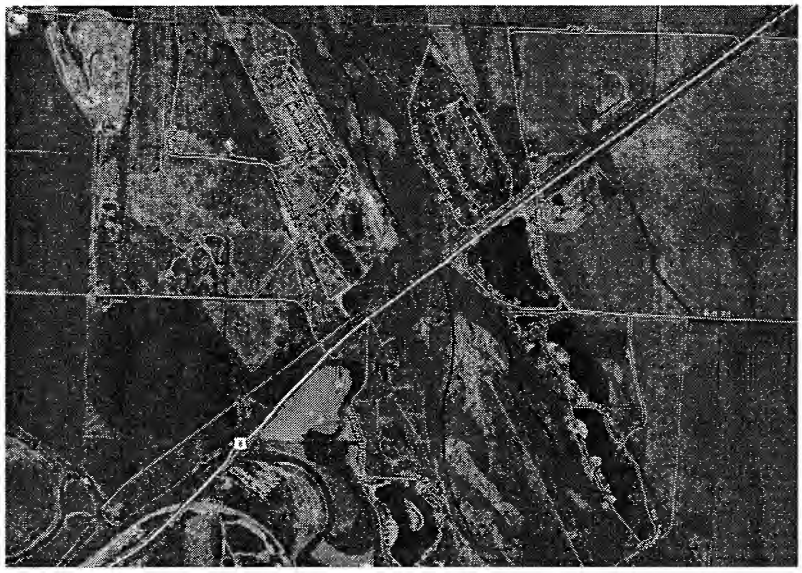


Figure 2. Site 1 Dust Strips

Site 2: One strip totaling approximately 5,750 feet in length near the Thomas Lakes area, where the main river width narrows considerably. Damaging ice jams in this reach have previously threatened Thomas Lake residences and the Western Sarpy levee.

Figure 3. Site 2 Dust Strip

Site 3: Two strips totaling approximately 9,050 feet in length upstream and downstream of the Platte-Elkhorn confluence, with one strip extending up the Elkhorn along the east bank and the other strip extending along the west bank of the Platte. Ice jams have threatened and overtopped the Western Sarpy and Clear

Creek levees in this reach, causing considerable damage to property behind the levees.

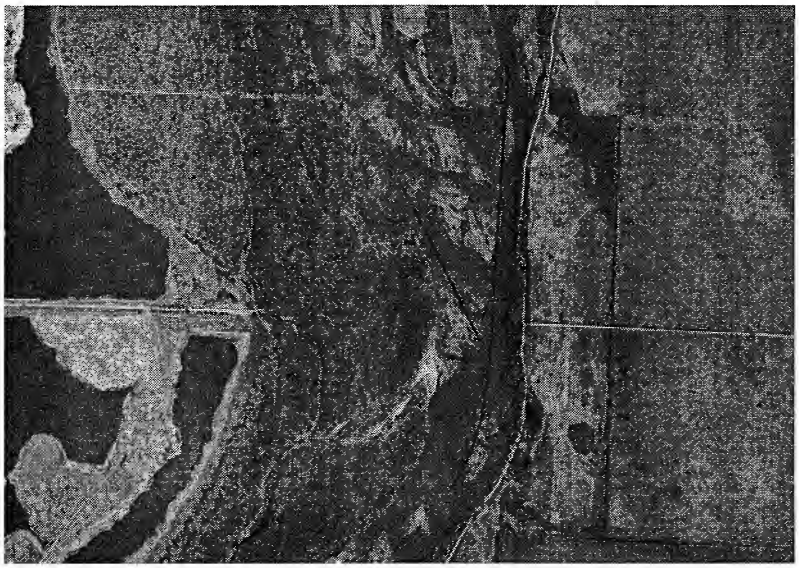


Figure 4. Site 3 Dust Strips

Site 4: Approximately 5,450 feet in length near County Roads H and I in Saunders County. This is a new dusting area, but ice jams have historically formed in this area and threaten the Clear Creek levee system.

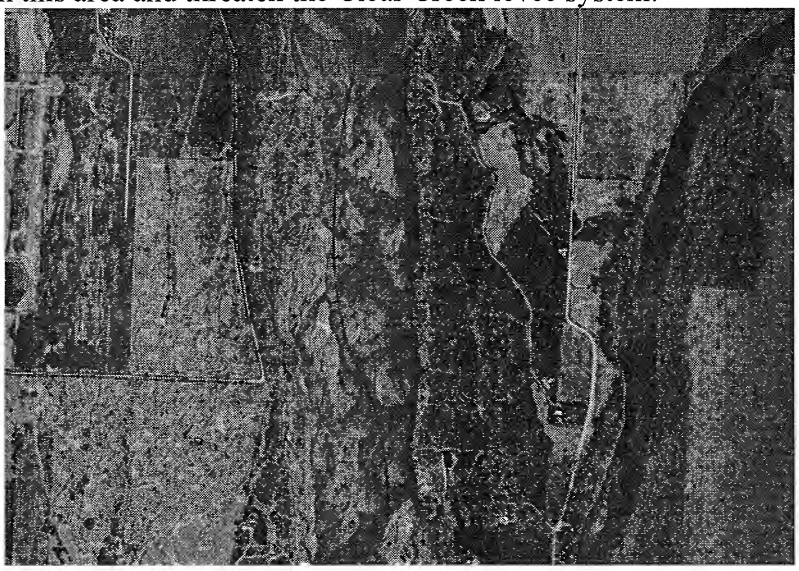


Figure 5. Site 4 Dust Strip

Site 5: Approximately 3,650 feet in length near Two Rivers Recreation Area. This site was previously dusted in 1979, 1994 and 2010 dusting operations, and ice jams have historically formed in this area.

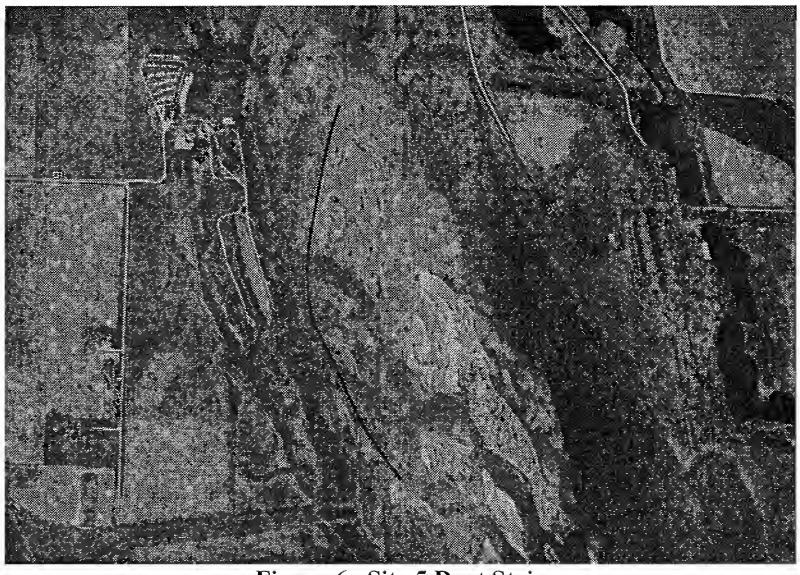


Figure 6. Site 5 Dust Strip

Site 6: Approximately 18,150 feet in length upstream of the Highway 92 Bridge. The lower portion of this site was previously dusted in the 1994 and 2010 dusting operations, while the upper portion of the site was added to the 2010 dusting operations. These two previous sites were combined into one site due to their close proximity. Ice jams have historically formed in this area and caused or threatened damage to property and infrastructure.

Figure 7. Site 6 Dust Strip

Site 7: Approximately 14,950 feet in length upstream of the Highway 64 Bridge, along the east bank near the Union Dike reach. This reach was previously dusted in 1979, 1994 and 2010 dusting operations, and ice jams have historically formed

throughout this reach, with several overtopping the Union Dike, causing considerable damage to property behind the levee.

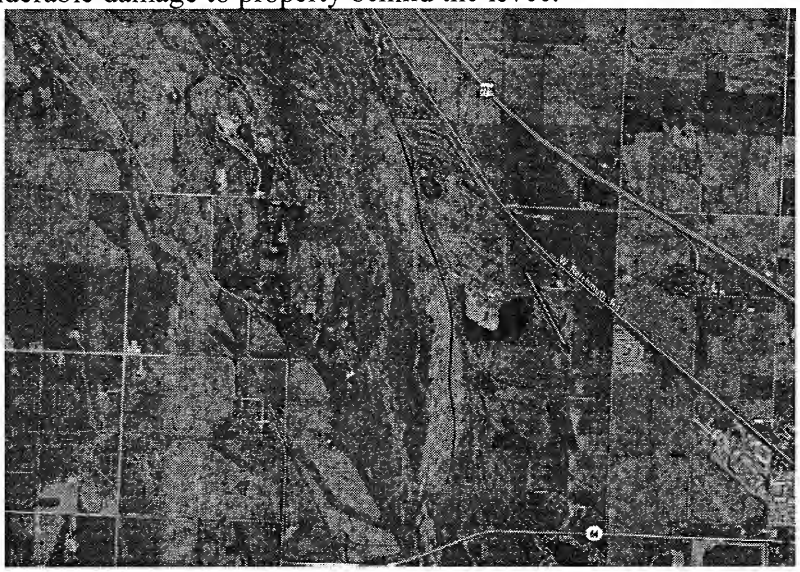


Figure 8. Site 7 Dust Strip

Site 8: Approximately 5,400 feet in length upstream of Highway 77 near Fremont. This area was dusted in 2010, as ice jams have historically formed in this area, causing damage to residences in the Big Island area, as well as threatening the South Fremont levee.

Figure 9. Site 8 Dust Strip

Site 9: Approximately 5,950 feet in length upstream and downstream of the Highway 79 bridge near North Bend. This area has been dusted in 2010, as well

as 1979. Ice jams in this location have caused left bank overflows that threaten property from North Bend to Fremont, including Fremont.

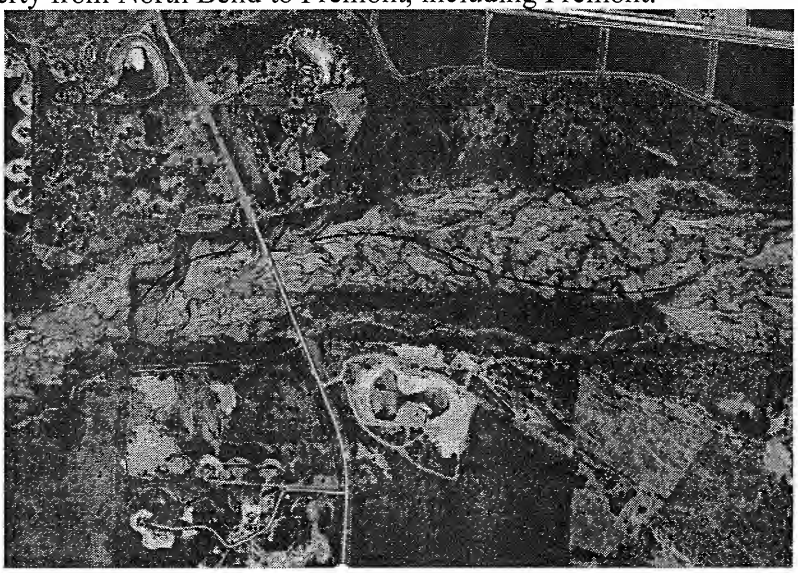


Figure 10. Site 9 Dust Strip

2. Estimates of dusting material and duration of operations have been computed and are shown in the table below for each site. The following assumptions have been made in deriving these estimates:

> *Dusting Material: Assumes each strip is 30 feet wide, with an application rate of 0.056 lb./ft^2 (based on recommended rate from previous operations in various locations);*
>
> *Flight Time: Total cumulative flight time from wheel up to wheel down, assumes average payload of 1250 lb/flight (based on 1994 experience), flight speed of 90 mph, Wahoo airport serves as center of flight operations;*
>
> *Total Operation Time: Assumes 3 planes in operation, 22 minutes of downtime between flights (for reloading and refueling, based on 1994 experience), total elapsed time from initiation of first load to final load delivered. This does not include the time to dry, load and deliver the material to the flight operations center, nor does it include preparation time for marking dusting strips.*

Flight time and total operation time estimates can be updated based on the operation of one aircraft, as was done in the 2010 operations, if this will be the desired mode of operation in 2011.

Table 1. Summary of Dusting Operation Quantity and Time Requirements

Site Number:	Dusting Material per site, tons	Flight Time per site, hh:mm	Total Operation Time per site, hh:mm
1	10.5	6:55	4:20
2	4.8	2:55	1:55
3	7.5	4:35	3:00
4	4.5	2:25	1:40
5	3.0	1:15	1:00
6	15.1	6:45	5:10
7	12.5	5:20	4:10
8	4.5	1:55	1:30
9	5.0	3:00	2:00
Totals	**67.5**	**35:05**	**24:45**

3. The recommended date of dusting is during the week of February 14. If weather conditions do not permit flight operations, dusting should commence no later than the week of February 22. If heavy snowfall is forecast for the period following application, consideration should be given to delaying the operation, as snowfall depths greater than 6 inches can significantly reduce the effectiveness of the material applied. If unexpected significant snowfall covers the dusted area following application, consideration of a second application may be warranted.

4. Based on previous experience, it is highly recommended that the dusting material be thoroughly dried prior to delivery to the flight operation center, to ensure the material flows smoothly during application. Additionally, the material should be given time to cool sufficiently to prevent damage to handling equipment, as occurred during the 1994 dusting operation.

5. It is recommended that the dusting sites be prioritized according to flood risk, in the event that time and/or budgetary concerns become an issue. It is our recommendation to break the sites into 3 priority groups, as shown below, although the State may recommend different priorities.

Priority 1: Sites 1, 3, and 7 (30½ tons material, 11½ hrs total operation time)
Priority 2: Sites 2, 8, and 9 (14¼ tons material, 5½ hrs total operation time)
Priority 3: Sites 4, 5, and 6 (22¾ tons material, 7¾ hours total operation time)

6. Delineation of the dusting strips were based upon the most recent aerial photography available (August 2010 for Fremont to Ashland, older for North Bend) and main channels were verified against video from the mouth of the Platte to Ashland obtained during initial ice formation in early December. Since the August photography was obtained during a period of relatively high flow and the video was taken on an oblique view, the flight lines proposed may not follow the main flow channel exactly. Proposed flight paths also take into consideration the ability of aircraft to maneuver safely and maintain relatively level flight to obtain a uniform distribution of material.

7. Delineating the dusting strips on the ice surface has proven to be problematic in past dusting operations, as there are no landmarks by which to judge distance or location at the ice surface. It is highly recommended that GPS technology be utilized to assist in marking and/or following the dusting strips, as was done in 2010.

8. These ice dusting recommendations only cover the Platte River. The threat of ice jam related flooding on major tributaries such as the Elkhorn are probably as significant as on the Platte. However, ice dusting is not recommended on those streams, as the channels are much more narrow and sinuous, making flight difficult and dangerous.

9. Even though careful consideration has gone into the above plan, it should be noted that application of dusting material does not guarantee that an ice jam will not form in the dusted reach. There is also the risk of an ice jam forming in a non-dusted reach of the river. It is important for the State and Local officials to maintain vigilance throughout the ice breakup period and monitor for ice jam conditions throughout the Platte River.

10. It is highly recommended that a coordination meeting between the State of Nebraska Emergency Management, the Corps (Hydro Branch and Emergency Management), and any other entities involved take place at least one week prior to commencement of operations to discuss logistics of the operation and technical assistance the Corps may provide during the operation. The Corps will also prepare a final assessment into the potential for ice jam flooding one week prior to dusting, similar to the assessment prepared on 26January2011, to assist in determining the need to proceed with the operation.

River Basin	Station Name	1/25/11 NWS Flood Projections					
		90%	80%	70%	60%	50%	40%
James	Grace City	14.6	15.1	15.7	16.2	16.7	17.2
James	Kensal	-	-	-	-	-	-
James	Pingree	10.3	10.7	11	11.1	11.2	11.4
James	Jamestown	-	-	-	-	-	-
James	LaMoure	14.6	16.2	16.8	17	17.2	17.4
James	Ludden	15.5	16.3	16.7	16.8	16.9	17.2
James	Columbia	18.6	19.5	19.7	19.7	19.7	19.8
James	Stratford	19	19.3	19.5	19.6	19.8	19.9
James	Ashton	19	20.8	21.6	22.1	22.8	23.6
James	Redfield	20.7	23.9	25.8	27.1	29.8	31
James	Huron	15.2	17.1	17.7	18.1	19.7	20.1
James	Forestburg	15	16	16.3	16.9	17.6	18
James	Mitchell	21.2	22.2	22.9	23.6	24	24.9
James	Scotland	16.9	17.6	17.9	18.2	18.7	19.4
Big Sioux	Brookings	13.6	13.8	14	14.2	14.3	14.4
Big Sioux	Dell Rapids	15.3	15.4	15.5	15.7	15.8	15.9
Big Sioux	60th Street	16.3	16.7	16.9	17.4	17.7	18
Big Sioux	North Cliff	23.3	24.1	24.6	26.3	27.2	28.2
Big Sioux	Hawarden	21.9	22.2	22.7	23.1	23.6	24.2
Big Sioux	Akron	22	22.3	22.7	23.1	23.7	24.4
Big Sioux	Sioux City	95.7	96.3	96.8	97.5	98.6	99.4
Vermillion	Davis	13.6	14.1	14.3	14.4	14.7	14.9
Vermillion	Wakonda	17	17.1	17.3	17.4	17.5	17.6
Vermillion	Vermillion	20.5	22.2	24.3	25.3	26.1	27.3
Floyd	Sheldon	14.2	14.4	14.6	14.7	14.9	15
Floyd	Alton	15.1	15.3	15.9	16.3	16.5	16.8
Floyd	Le Mars	19.1	19.9	20.3	20.5	20.9	21.1
Floyd	Merrill	7.9	9	9.8	10.1	10.9	12.1
Floyd	James	17	18	18.8	19.2	19.7	20.9
Little Sioux	Spencer	11.4	11.7	12.2	12.4	12.7	13.1
Little Sioux	Linn Grove	18.1	18.4	18.8	19.1	19.3	20
Little Sioux	Cherokee	13.8	14.5	16.5	16.9	17.8	19
Little Sioux	Correctionville	11.5	12.1	14.1	15.3	16.3	18.1

Forecast period: Jan 30-Apr 30

Gray highlighted cells refer to data from the COE CWMS database

m = missing data

Orange highlight = 90% chance of exceeding flood stage

Yellow highlight = less than 90% chance of exceeding flood stage

			Peak Stages			Flood Stage
30%	20%	10%	1997	2009	2010	
17.7	18.2	20.5	14.77	17.74	11.82	12'
-	-	-	14.00	16.69	10.18	9'
11.6	11.8	12.3	11.37	13.15	10.80	9'
-	-	-	12.04	14.13	11.21	12'
17.5	18.1	18.4	16.09	17.56	15.78	14'
17.5	17.7	18.4	17.86	16.74	15.79	12'
20	20.1	20.5	19.08	19.83	18.99	13'
20	20.4	20.6	19.48	20.06	20.08	14'
25.8	26.7	28.2	26.05	22.96	25.27	13'
31.8	33.6	34.4	29.92	25.74	29.33	20'
21.1	21.9	23	21.28	16.64	19.79	11'
20.1	20.8	21.8	20.66	16.03	19.14	12"
26.2	26.8	27.4	23.14	21.89	25.43	17'
20	20.3	21.1	19.81	16.99	19.64	13'
14.6	14.9	15.2	13.19	10.84	13.57	9'
15.9	16.2	16.4	15.47	11.27	16.08	12'
18.3	19	19.9	16.32	m	m	12'
29.3	31.1	35.1	23.11	12.10	21.61	16'
24.8	25	27.4	22.50	m	m	15'
25.1	26.5	28.6	22.64	12.99	22.90	16'
100	102.2	104.3	96.80	m	97.70	99'
15.2	15.5	15.9	14.90	m	m	11'
17.7	17.9	18.1	16.93	m	m	14'
27.9	29.3	31.4	22.10	11.65	27.42	21'
15.1	15.3	15.7	11.80	m	m	12'
17.4	17.8	18.1	15.66	12.63	17.89	12'
21.4	22.2	22.7	m	m	m	20'
13.5	15.5	16.4	8.70	m	m	12'
22.3	24.2	26.7	20.69	17.57	20.25	26'
13.7	14.2	14.7	13.20	m	m	10'
20.3	21.2	21.9	28.12	17.52	22.84	18'
20.2	21.7	22.9	m	m	27.30	17'
19.5	20.8	21.7	15.73	12.37	23.78	19'

[redacted] NWO

From: [redacted] NWK
Sent: Thursday, February 03, 2011 1:41 PM
To: [redacted] NWD02; Farhat, Jody S NWD02
Subject: FW: recent snow/possible flood (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Kevin and Jody,

We received a query from Maria Fisher from the Associated Press. She wanted to know, "I am wondering what effect _ if any _ this winter's snowpack has on possible spring floods and/or reservoir releases."

Can either one of you respond to her and let me know what was said?

Diana McCoy
Public Affairs Specialist
U.S. Army Corps of Engineers
Kansas City District
(816) 389-3485: Office
(816) 812-5708: Cell

Find us on the Web! www.nwk.usace.army.mil

"Like" us on Facebook! www.facebook.com/usace.kcd

-----Original Message-----
From: [redacted] NWK
Sent: Thursday, February 03, 2011 10:40 AM
To: McCoy, Diana NWK
Subject: FW: recent snow/possible flood (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Diana,

Please coordinate. Thanks

-----Original Message-----
From: [redacted] NWK
Sent: Thursday, February 03, 2011 10:38 AM
To: [redacted] NWK
Subject: RE: recent snow/possible flood (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

I would send her to Kevin Grode or Jody Farhat at the RCC. This type of forecasting is really a NWS issue.

-----Original Message-----

From: [redacted] NWK
Sent: Thursday, February 03, 2011 9:12 AM
To: [redacted] NWK; McCoy, Diana NWK
Cc: [redacted] NWK
Subject: FW: recent snow/possible flood (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

[redacted]

Can you create a response and coordinate with Diana to respond? Thanks --David

-----Original Message-----
From: Fisher, Maria [mailto:mfisher@ap.org]
Sent: Thursday, February 03, 2011 8:58 AM
To: [redacted] NWK
Subject: recent snow/possible flood

David:

I am wondering what effect _ if any _ this winter's snowpack has on possible spring floods and/or reservoir releases.

Thanks,
Maria

Maria Sudekum Fisher
The Associated Press
215 W Pershing
Kansas City MO 64108
800 852 4844
816 421 4844

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

[redacted] NWO

From: [redacted] NWD02
Sent: Thursday, February 03, 2011 9:31 AM
To: [redacted] NWO; Allen Shoemaker; Bernie Meyer; Bob Fuerman; Bob Williamson; Cecil Gilkey; Chris Fox; Chuck Weber; Curt Skouby; Dan Walters; David Greene; David Murphy; Don Rea; Donna Meyer; Doug Drummey; Frank Genovese; Frank Pogge; Gilbert Cole; James Walton; Jeff Arnold; Jim Adams; Jim Mellem; Jim Owens; Jim Shields; Jim Urfer; Joel Christensen; John Kaufman; John Meads; KCMO OEM; Kyle Goodmanson; Lynda L Hoffman; M.L. Cauthon; Mike Gant; Mike Klender; Mike Koenig; Mike Maas; Mike Mathews; Mike Wood; Mort Dastjerdi; Pat Friend; Patrick Mickle; Quintin Hefner; Ray Elliott; Ray Tweedy; Ron Kopaska; Steve Miller; Steve Ridenhour; Steve Schleicher; Terry Leeds; Todd Baslee; Tom Schrempp; William McCaffree; Adam Heflin; Ben Cerra; Brad Lewis; Brian Barels; Chris Stipp; Dan Rembold; Darrell Dorsey; Dave Fox; Dave Ulozas; David Hall; Diane Bechmann; Don Scardino; Dong Quach; Fadi Diya; Frank Kerner; Gail Gary; Jeffery Dykes; Jerry Bindel; Jerry Hogg; Jim Parker; Joe Citta; John Fuentez; John Janorschke; John Pozzo; Justin Reimers; Laura Becker; Lee Eitel; Les Kanuckel; Mark Howell; Mark Litzinger; Mark Skinner; Marty Barker; Matt Finnegan; Matt Reed; Maxine Kline; Michael Marr; Mike Menne; Mike White; Patrick Cassidy; Paul Ling; Randy Kempf; Reg Soepnel; Ron Rutter; Ron Steffens; Russ Baker; Stacy Maxwell; Steve Brooks; Steve Schoolcraft; Tim Backes; Warren Witt; Anderson, G Witt NWD; Bertino, John J Jr NWO; [redacted] WD; Brian Allen; [redacted] D NWK; [redacted] NWO; DLL-CENWD-PDM; [redacted] NWO; [redacted] NWK; Hofmann, Anthony J COL NWK; John Drew; Julie Meyer; Karen Rouse; [redacted] NWK; [redacted] NWK; [redacted] NWD; Cruse, Lester External Stakeholder; McMahon, John R BG NWD; MO State Em Res Ofc; [redacted] NWK; [redacted] NWK; [redacted] NWO; Ruch, Robert J COL NWO; Rudy, James D NWK; Rux, Lori NWD; Schenk, Kathryn M NWO; [redacted] NWO; [redacted] J NWO; [redacted] NWO; [redacted] NWO; [redacted] NWO; Wingert, Kevin M NWO
Subject: Missouri River Ice Formation - Thursday, February 3rd, 2011 (UNCLASSIFIED)
Attachments: sux.jpg; pone.jpg; mane.jpg; gasd.jpg; icereport_3Feb2011.pdf

Classification: UNCLASSIFIED
Caveats: NONE

Good morning from the Missouri Basin Water Management Division.

==========
Missouri River Downstream of Gavins Point Dam:

River Conditions: Missouri River stages downstream of Gavins dropped last night; however, conditions appear to be returning back to more normal conditions. Last night stages rose sharply at Maskell (RM 776) and dropped about 1.5 feet at Ponca (RM 751), indicating a possible jam somewhere in that 25-mile reach. However, over the last few hours, stages at Ponca appear to be increasing back to more normal conditions.

I've attached some plots of the Missouri River:

Missouri River at Gayville, SD (gasd.jpg, about 15 miles d/s of Gavins) Missouri River at Maskell, NE (mane.jpg, about 20 miles d/s of Gayville) Missouri River at Ponca, NE (pone.jpg, about 25 miles d/s of Maskell) Missouri River at Sioux City, IA (sux.jpg, about 20 miles d/s of Ponca)

Action: At this time, no action is needed with warmer weather returning to the area.

Gavins Release: Releases are currently 19,000 cfs. We will be increasing to 20,000 cfs on Saturday at midnight (end of Friday) and increasing to 21,000 cfs on Monday at midnight (end

of Sunday). We plan to maintain that release of 21,000 cfs for the next few weeks. The higher flows will assist with ice flow and decrease the chance of ice jams forming.

Monitoring: This office will monitor river conditions on a continual basis.
We receive Missouri River ice reports each morning (Mon - Fri) based on actual observations.
If you see river/ice conditions change, please feel free to call or email either myself (kevin.r.grode@usace.army.mil,
402.996.3870) or Jody Farhat (jody.s.farhat@usace.army.mil, 402.996.3840).

Website: The MBWM website is at www.nwd-mr.usace.army.mil/rcc/. The ice report is under Current Conditions-River Reports. River stage conditions can be found under Current Conditions-DCP Information-Hourly DCP Plots.

Weather Forecast: Temperatures in the area of concern are expected to increase over the next few days. Temperatures are expected to drop next week, but not nearly as much as was experienced this last week.
==========

Again, feel free to call or email me if you have any questions.

[redacted]

[redacted].
Reservoir Regulation Team Lead
Missouri River Basin Water Management,
Northwestern Division, USACE
[redacted]
[redacted] (fax)

Classification: UNCLASSIFIED
Caveats: NONE

US Army Corps of Engineers®

Missouri River Basin
Water Management Division

MISSOURI RIVER
DAILY ICE REPORT

SUBMITTED BY
CENWO-OD-MR
CENWK-ED-HC

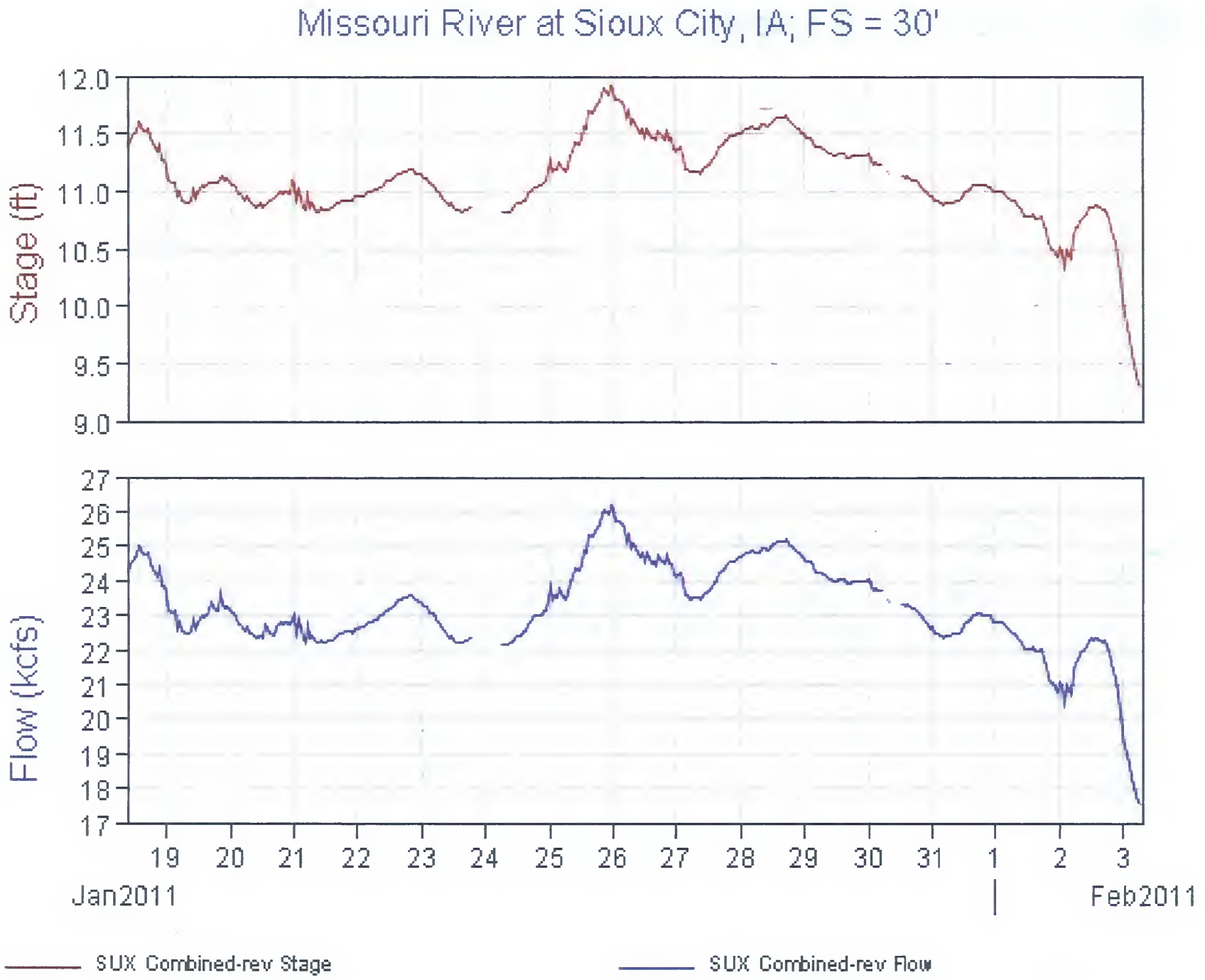
DATE: February 3, 2011
Revised @ 0855 HRS

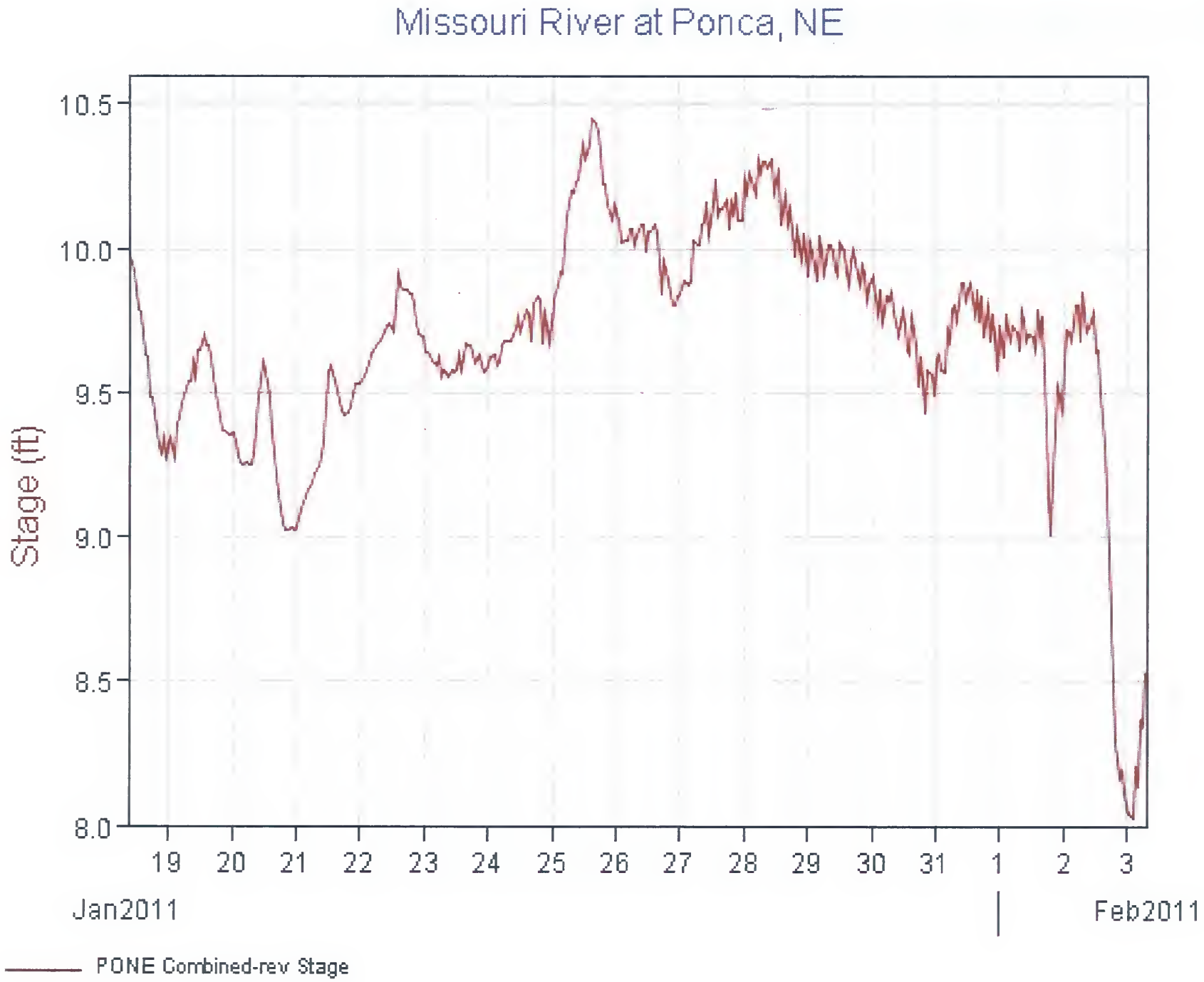
STATION	*RIVER MILE*	*TIME*	*TOTAL % OPEN CHANNEL*	*AVE* % SHORE ICE*	*AVE* % FLOAT ICE*	*TYPE & SIZE OF ICE*	*MISC. NOTES*
Ponca State Park, NE		0800	20		80	5-20 ft pan ice	
Belle of Sioux City, IA	732.0	0800	40		60	5-20 ft pan ice	
IPS Sioux City, IA	718.4		No Report				
Decatur, NE	691	0800	15		85	5-15 ft pan ice	
Ft. Calhoun, NE	645.9		No Report				
Missouri River Proj Ofc, NE	627.0	0800	10		90	5-15 ft pan ice	
IPLC Co Bluffs, IA	606.0	0800	No Report				
Plattsmouth Bridge, NE	591.5	0800	No Report				
Nebraska City, NE	556.3	0800	20		80	10-30 ft pan ice	
Cooper Nuclear, NE	532.6	0800	20		80	10-25 ft pan ice	
Camp Rulo, NE	498.0		No Report				
Atchison, KS	448.0	0900	10		90	3-5 ft pan ice	
Kansas City, MO	370.5	0900	55-60		40-45	3-5 ft pan ice	
Napoleon, MO	328.7	0900	40		60	3-10 ft pan ice	
Waverly, MO	293.5	0900	65		35	5-15 ft pan ice	
Glasgow, MO	226.7	0900	No Report				
Jefferson City, MO	143.9		No Report				
Chamois Power, MO	117.1	0900	No Repot				Fog
Hermann, MO	97.9		No Report				
St. Louis, MO	36.5		No Report				

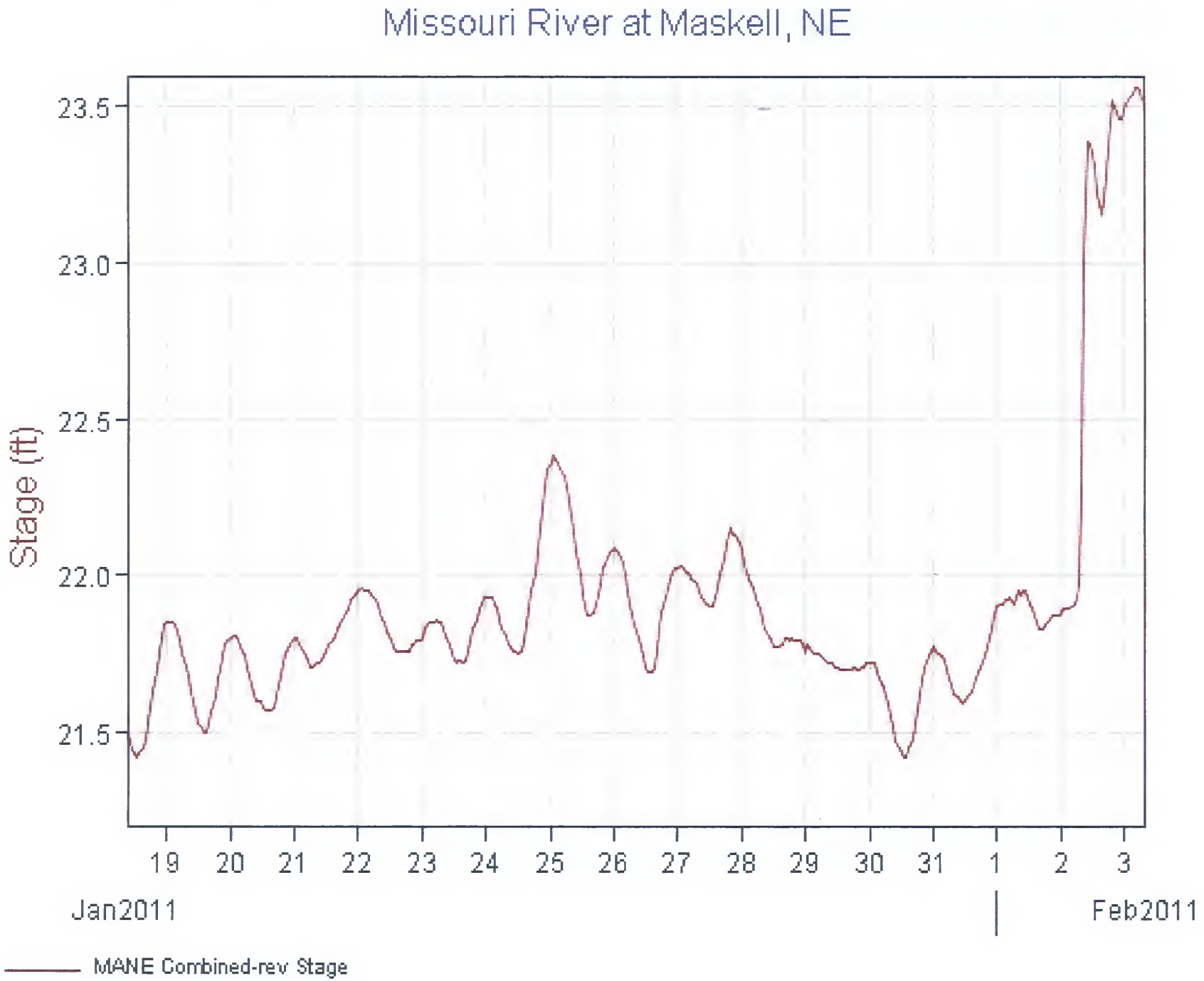
*** AVE = AVERAGE**

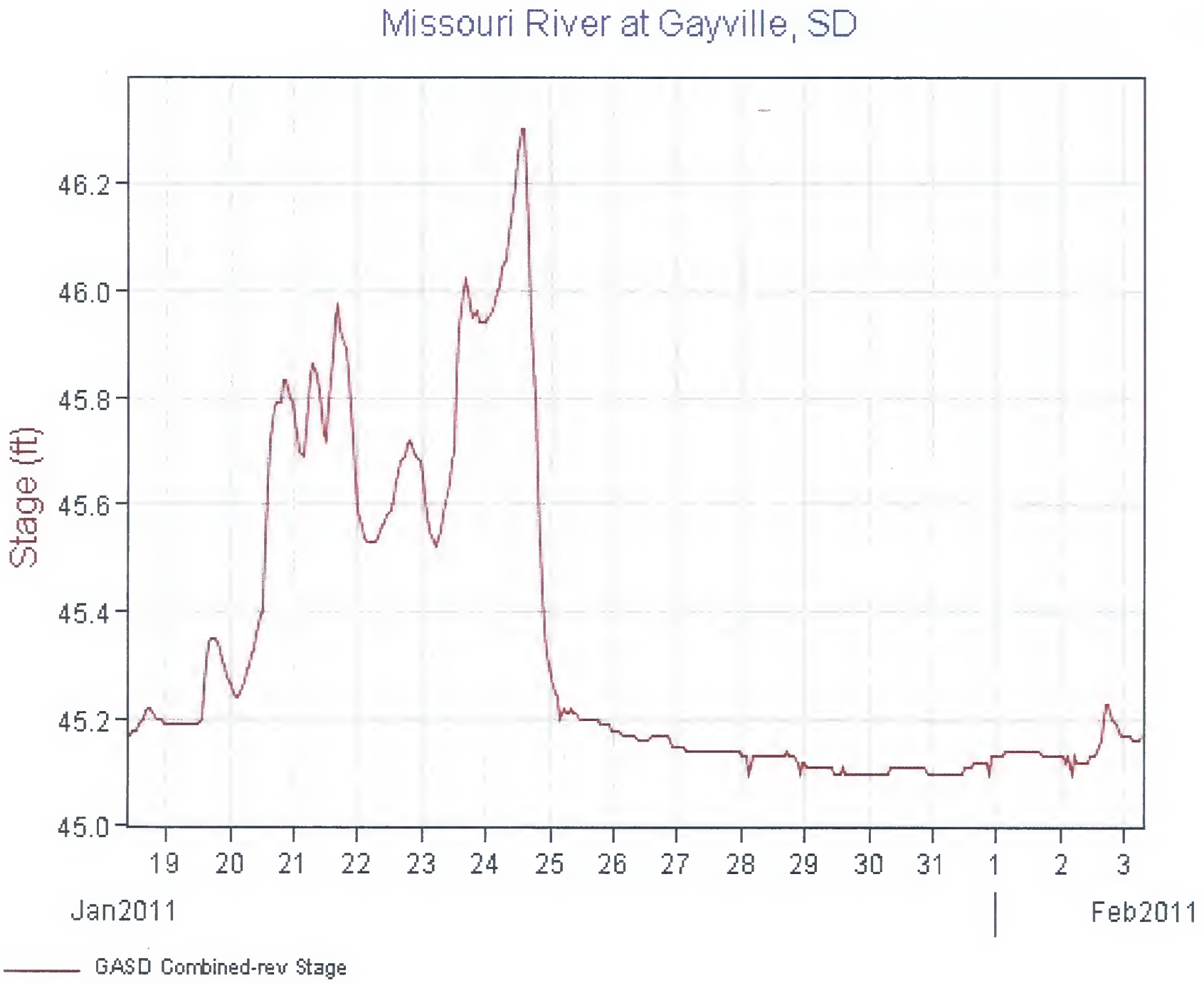
Pagemaster: CENWD-PDR
Email: Missouri.Water.Management@.usace.army.mil

Bismarck, ND Web Camera Images at ERDC/CRREL


Missouri River at Sioux City, IA; FS = 30'
Stage (ft)
12.0
11.5
11.0
10.5
10.0
9.5
9.0
Flow (kcfs)
27
26
25
24
23
22
21
20
19
18
17
19
20
21
22
23
24
25
26
27
28
29
30
31
1
2
3
Jan2011
Feb2011
SUX Combined-rev Stage
SUX Combined-rev Flow


Missouri River at Ponca, NE
Stage (ft)
10.5
10.0
9.5
9.0
8.5
8.0
19
20
21
22
23
24
25
26
27
28
29
30
31
1
2
3
Jan2011
Feb2011
PONE Combined-rev Stage


Missouri River at Maskell, NE
Stage (ft)
23.5
23.0
22.5
22.0
21.5
19
20
21
22
23
24
25
26
27
28
29
30
31
1
2
3
Jan2011
Feb2011
MANE Combined-rev Stage


Missouri River at Gayville, SD
Stage (ft)
46.2
46.0
45.8
45.6
45.4
45.2
45.0
19
20
21
22
23
24
25
26
27
28
29
30
31
1
2
3
Jan2011
Feb2011
GASD Combined-rev Stage

[redacted] NWO

From: [redacted] NWO
Sent: Wednesday, February 09, 2011 11:06 PM
To: Farhat, Jody S NWD02
Cc: [redacted] NWD02; [redacted] NWD02; [redacted] NWO
Subject: RE: February 10th State Agency Briefing (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

Thanks Jody. Yes, Todd will be at the meeting.

[redacted]
Chief, Readiness Branch
U.S. Army Corps of Engineers - Omaha District
1616 Capitol Ave., Ste 9000
Omaha, NE 68102
[redacted] Office
[redacted] Blackberry
[redacted]@usace.army.mil

-----Original Message-----
From: Farhat, Jody S NWD02
Sent: Wednesday, February 09, 2011 9:11 AM
To: [redacted] NWO
Cc: [redacted] NWD02; [redacted] NWD02; [redacted] NWO
Subject: FW: February 10th State Agency Briefing (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

[redacted] - The 3 week is a place to start, but there's more to it. Mike Swenson and the Power Production team (and all weekend workers) will be closely monitoring runoff in ND as we move into the melt season and will be making release changes from Garrison as needed. It'll be a tricky operation - we don't want to drop releases in advance of the melt if the river is still frozen due to concerns about what the ice might do. But we also recognize that there isn't a lot of channel capacity through the Bismarck area, so our intent will be to watch for the start of the melt and make incremental release reductions as the tributary flows increase. Mike Swenson should be your POC on reservoir operations for flooding in the upper basin.

I've asked Todd Lindquist to keep us updated on local conditions since the weather report doesn't tell us how the snowpack is ripening and how much water is in the ditches. In turn, we are keeping him updated on all our release changes at Garrison since he's the one that gets called first. I expect Todd will be at the meeting on Thursday.

Thanks,
Jody

-----Original Message-----
From: [redacted] NWD02
Sent: Wednesday, February 09, 2011 7:26 AM

To: [redacted] NWO
Cc: Farhat, Jody S NWD02; [redacted] NWD02
Subject: Re: February 10th State Agency Briefing (UNCLASSIFIED)

[redacted]

I'd recommend you see our website - forecast information - reservoir. We update our three-week forecast every Wed afternoon. That would show our best estimate of ave daily releases. Mike Swenson is POC for that.

[redacted]

[redacted]
MRBWM Res Reg Team Lead
[redacted] (Office)
[redacted] (BB)

Message sent via my BlackBerry Wireless Device

----- Original Message -----
From: [redacted] NWO
To: Farhat, Jody S NWD02; [redacted] NWD02
Cc: [redacted] NWO; [redacted] NWO
Sent: Tue Feb 08 23:48:38 2011
Subject: FW: February 10th State Agency Briefing (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

Hi Jody and [redacted]

I read the news release today with some great info in it pertaining to operations. We are meeting with the State of ND on Thursday, is there anything else we need to inform them of or need to know? They are very curious as to what releases potentially could be in all reservoirs and flood outlook.

Thanks,
[redacted]

[redacted]
Chief, Readiness Branch
U.S. Army Corps of Engineers - Omaha District
1616 Capitol Ave., Ste 9000
Omaha, NE 68102
[redacted] Office
[redacted] Blackberry
[redacted]@usace.army.mil

-----Original Message-----
From: Donahue, Kathleen B. [mailto:kdonahue@nd.gov]
Sent: Friday, February 04, 2011 7:08 PM
To: [redacted] NWO; [redacted] MVP
Subject: February 10th State Agency Briefing

[redacted]

We are looking forward to having you both participate in our February 10th State Agency Flood Preparedness Briefing. I'm also hoping to have a chance to talk with both of you and Amy regarding request letters. We want to make sure we are addressing what you need and expect in the letter.

I've attached an agenda for your review. Plan on talking for about 15 minutes or less (up to 30 minutes combined) on the following:

- The forecast for flooding and its potential impacts on the dams in your jurisdiction
- What types of releases can we anticipate based on the forecast
- Preparedness measures underway in support of North Dakota by your respective districts

We appreciate you taking the time to be with us.

Kathleen Donahue, Planning Officer

N.D. Department of Emergency Services

Division of Homeland Security

kdonahue@nd.gov

701.328.8113 (desk)

701.391.1225 (cell)

800.773.3259 (tollfree)

It's not the plan that is important. It's the planning. -- Graeme Edwards

Classification: UNCLASSIFIED
Caveats: FOUO

Classification: UNCLASSIFIED
Caveats: FOUO

NEWS RELEASE

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG ®**

For Immediate Release:
Feb. 8, 2011

Contact:
Monique Farmer - (402) 995-2416
monique.l.farmer@usace.army.mil

Jody Farhat – (402) 996-3840

Corps prepared to handle potentially high runoff season

OMAHA, Neb. – With the spring runoff season just a month away, the U.S. Army Corps of Engineers Missouri River Basin Water Management office is prepared to handle another potentially wet year.

Total storage in the Corps' six mainstem reservoirs currently sits at 56.9 million acre feet, down 9 million acre-feet from the crest last July, and just 100,000 acre-feet above the base of the annual flood control pool.

"We are currently monitoring snow conditions on the plains, which are similar to the above-normal conditions we saw in both 2009 and 2010," said Jody Farhat, Chief of the Water Management Division. "Mountain snowpack is running ahead of last year, but the big unknown is the rainfall." Last year's high runoff in the Missouri River basin and resulting flooding was due in large part to widespread heavy rains.

According to Farhat, it's still too early to know whether basin states can expect flooding this spring. "Although there is a considerable amount of snow out there and soil conditions are moist in many areas, there are many other factors that influence flood potential. These include how quickly the snow melts, whether or not it is accompanied by rain, and whether ice jams will contribute to flooding during the melt," she said. Throughout the year the Water Management office adjusts releases at each of the dams to reduce the potential for flood damages to the extent possible.

Mountain snowpack is 112 percent of normal for this time of year above Fort Peck, and 111 percent between Fort Peck and Garrison (the Yellowstone River basin). Traditionally, 61 percent of the peak accumulation of mountain snow has occurred by Feb. 1.

Runoff for 2011 is forecast to total 28.4 MAF, 114 percent of normal. The 2010 total was 38.8 MAF, 156 percent of normal.

Releases from Gavins Point Dam averaged 18,500 cubic feet per second during January. The long-term average for January is 17,200 cfs. Releases were increased from 19,000 to 21,000 cfs in early February and are expected to remain at that level through mid-March, but may be adjusted if necessary in order to avoid ice jams or downstream flooding.

Fort Randall reservoir rose 5.3 feet last month as it received hydropower releases from Oahe and Big Bend. The reservoir ended January near elevation 1345.8 feet. It is expected to climb 4.2 feet in February, ending the month near elevation 1350, the base of its flood control zone.

Big Bend reservoir will remain in its normal range of 1420 to 1421 feet. Releases will be adjusted to meet hydropower needs.

Oahe reservoir releases averaged 22,500 cfs during the month of January. They are expected to average 22,300 cfs during the month of February. The reservoir rose 0.1 foot in January, ending the month essentially level at 1605.4 feet. It is expected to climb slightly by 0.8 foot in February, ending the month near elevation 1606.2, which 1.3 feet below the base of the annual flood control zone.

Garrison Reservoir fell by 1.7 feet in January, ending the month at elevation 1840 feet. Releases were gradually increased from 21,000 cfs to 25,500 cfs during the month, and then to 26,000 cfs in early February. Releases will remain near that rate during February if river conditions permit. The reservoir will decline about 1.7 feet this month, and is expected to end the month near elevation 1838.3, which is 0.8 foot above the base of the annual flood control zone

Fort Peck reservoir maintained an average of 8,900 cfs during the month of January. Releases were increased from 9,000 to 10,000 cfs at the beginning of February. They will be held at that rate through the end of the month. The reservoir dropped by 0.1 foot in January, ending the month near elevation 2235.3 feet. It is expected to drop about half a foot in February, ending the month near elevation 2234.8, which is 0.8 foot above the base of the annual flood control zone.

The six main stem power plants generated 745 million kilowatt hours of electricity in January, 103 percent of normal. Total energy production for 2011 is forecast to reach 10.4 billion kWh. The long-term average is approximately 10 billion kWh.

View daily and forecasted reservoir and river information on the Water Management section of the Northwestern Division homepage at: http://www.nwd-mr.usace.army.mil/rcc.

Other links of interest:

- **www.mraps.org**
- **www.moriverrecovery.org**
- **www.facebook.com/OmahaUSACE**

U.S. Army Corps of Engineers – Northwestern Division
1616 Capitol Ave., Omaha, Neb. 68102
www.facebook.com/OmahaUSACE
https://www.nwo.usace.army.mil/

MISSOURI RIVER MAIN STEM RESERVOIR DATA

	Pool Elevation (ft msl)		Water in Storage - 1,000 acre-feet		
	On January 31	Change in January	On January 31	% of 1967-2010 Average	Change in January
Fort Peck	2235.3	-0.1	15,070	108	-4
Garrison	1840.0	-1.7	18,860	113	-549
Oahe	1605.4	+0.1	18,182	110	+123
Big Bend	1421.2	+1.1	1,683	98	+52
Fort Randall	1345.8	+5.3	2,815	93	+347
Gavins Point	1207.2	-0.6	373	88	-15
			56,983	109	-46

WATER RELEASES AND ENERGY GENERATION FOR JANUARY

	Average Release in 1,000 cfs	Releases in 1,000 af	Generation in 1,000 MWh
Fort Peck	8.9	548	89
Garrison	23.6	1,449	224
Oahe	22.5	1,383	201
Big Bend	19.7	1,213	74
Fort Randall	17.3	1,062	104
Gavins Point	18.5	1,139	53
			745

U.S. Army Corps of Engineers – Northwestern Division
1616 Capitol Ave., Omaha, Neb. 68102
www.facebook.com/OmahaUSACE
https://www.nwo.usace.army.mil/

[redacted] NWO

From: Farhat, Jody S NWD02
Sent: Friday, February 11, 2011 5:12 PM
To: [redacted] NWK
Cc: [redacted] NWK; [redacted] NWK; [redacted] NWK; [redacted] NWK
Subject: RE: Spring Pulse and NWK Levee Rehab (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

I think the key statement for both pulses is that they are within bank and will not impact levees. Downstream flow limits will shut off the pulses if pre-pulse flows are high enough to impact levees.

-----Original Message-----
From: [redacted] NWK
Sent: Friday, February 11, 2011 4:15 PM
To: Farhat, Jody S NWD02
Cc: [redacted] NWK; [redacted] NWK; [redacted] NWK; [redacted] NWK
Subject: Spring Pulse and NWK Levee Rehab

Jody,

COL Hoffman has asked us what impacts the spring pulse will have on levee rehab here in Kansas City. Judd Kneuvean gave me the following reply to pass onto COL Hoffman but thought I should get your confirmation.

Spring Pulse - March

March rise, if it occurs, will have no impact.

Spring Pulse - May

May pulse is within bank and is not likely to impact our levees. Our breaches should be repaired well before that.

Concur?

[redacted]

US Army Corps of Engineers

[redacted]

Classification: UNCLASSIFIED
Caveats: NONE

[redacted] NWO

From: [redacted] NWD
Sent: Friday, February 11, 2011 10:29 AM
To: Farhat, Jody S NWD02
Subject: FW: Mtg with Mr. Carwile - USACE Preparedness (UNCLASSIFIED)
Attachments: Flood Outlook_02092011.pptx

Classification: UNCLASSIFIED
Caveats: NONE

Jody,

FYSA and potential action as well. Not sure if you have any info you can provide to HQs in prep for their meeting with FEMA or not. Questions being asked below are

- Improvements made to mitigate potential flooding (i.e. Grand Forks project, levee rehab work completed). What levee work has been completed since 2008-2009 flooding for MVP, MVR, NWO, and LRL in the potentially impacted areas? Which rehabs are not completed.

- Reservoir control measures being taken in anticipation of potential flooding. Please describe the actions, such as early drawdown, etc., at specific reservoirs.

- Dams and levees of concern in areas where flooding may be expected.

- Potential for advance measures projects. Currently have contingency planning in MVP with communities along the Red River of the North, Minnesota River, Mississippi River and Devils Lake Basins as they prepare for spring flooding - please identify specific communities where Governors may request USACE assistance.

Also, NWD and MVD, what joint coordination is underway within North Dakota as both NWO and MVP conduct emergency response there?

Please provide any input by 1100hrs Central on Monday.

[redacted]
CH, Readiness and Contingency Operations Northwestern Division U.S. Army Corps of Engineers
Off# ([redacted] BB# ([redacted]

-----Original Message-----
From: [redacted] NWD
Sent: Friday, February 11, 2011 8:25 AM
To: [redacted] NWK; [redacted] NWO; Cenwk-EOC NWK; CENWO-EOC NWO
Cc: [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted]
Subject: FW: Mtg with Mr. Carwile - USACE Preparedness (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Data call from HQ. Please provide your answers to both NWD and Germaine by 1100 hours Central on Monday 14 February.

For the levee questions, that want to know the number repaired, the number being constructed, number scheduled for repair (w funds) and the number with no funds and won't be repaired. If there are any levees that are under significant threat, please go into detail on each.

[redacted]

-----Original Message-----
From: [redacted] HQ02
Sent: Friday, February 11, 2011 6:15 AM
To: [redacted] NWD; [redacted] MVD; [redacted] LRDOR
Cc: [redacted] NWD; [redacted] HQ02
Subject: FW: Mtg with Mr. Carwile - USACE Preparedness (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Divisions,

Bill Irwin, our FEMA LNO is scheduling a meeting with Ms. [redacted] and Mr. [redacted] at FEMA, to discuss potential spring flood impacts. We are using your Commander's Assessment, FY2011 Potential Flooding, as a starting point and additional information on the following items at a minimum:

- Improvements made to mitigate potential flooding (i.e. Grand Forks project, levee rehab work completed). What levee work has been completed since 2008-2009 flooding for MVP, MVR, NWO, and LRL in the potentially impacted areas? Which rehabs are not completed.

- Reservoir control measures being taken in anticipation of potential flooding. Please describe the actions, such as early drawdown, etc., at specific reservoirs.

- Dams and levees of concern in areas where flooding may be expected.

- Potential for advance measures projects. Currently have contingency planning in MVP with communities along the Red River of the North, Minnesota River, Mississippi River and Devils Lake Basins as they prepare for spring flooding - please identify specific communities where Governors may request USACE assistance.

Also, NWD and MVD, what joint coordination is underway within North Dakota as both NWO and MVP conduct emergency response there?

Need your response by 12 noon EDT on Monday, 14 Feb 2011. Any questions, call me at [redacted]

Thanks,
[redacted]

-----Original Message-----
From: [redacted] HQ02
Sent: Friday, February 11, 2011 8:40 AM
To: [redacted] HQ02
Subject: FW: Mtg with Mr. Carwile - USACE Preparedness (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

-----Original Message-----
From: Irwin, William (OGA) [mailto:William.Irwin@associates.dhs.gov]
Sent: Thursday, February 10, 2011 9:12 AM

To: [redacted] HQ02
Cc: [redacted] COL HQ02; [redacted] HQ02; [redacted] HQ02
Subject: Mtg with Mr. Carwile - USACE Preparedness

Ma'am. Mr. Carwile asked that I set up a meeting for you to come to FEMA HQ to discuss USACE actions in anticipation of potential significant flooding this spring. The NWS provided the attached presentation this morning at the daily operations briefing (FEMA Administrator, Deputy Administrator and other leadership were in the audience). I will work with Ms. Colter to set a time for the meeting. Potential topics would include:

- Improvements made to mitigate potential flooding (i.e. Grand Forks project, levee rehab work completed).
- Reservoir control measures being taken in anticipation of potential flooding.
- Floodfight team status.
- Emergency contracting capabilities and capacity.
- Dams and levees of concern in areas where flooding may be expected.
- Equipment and supplies staged, to include HESCO barriers, pumps, sandbags.
- Ice jam expertise and response capabilities.
- Potential for advance measures projects.
- USACE/State and Local floodfight planning and coordination.

Also, for Situational Awareness, the FEMA Future Ops requested a meeting on Monday with the USACE operations and future ops planning team to discuss joint Spring flooding planning. This invitation went to Liz Miller, Ron Davis and Germaine Hofbauer.

v/r,

[redacted]

U.S. Army Corps of Engineers

([redacted])

([redacted])

Classification: UNCLASSIFIED
Caveats: NONE

National Weather Service
Upper Midwest
Hydrologic Outlook

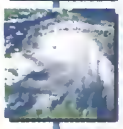
February 9, 2011

Data Points

- Fall precipitation was well above normal
- Snowfall has also been above normal
- Snow Water Equivalent (SWE) estimates are near historic highs
- Moderate to major flooding is anticipated at many locations this spring
- Above normal precipitation between now and spring will elevate the flood risk

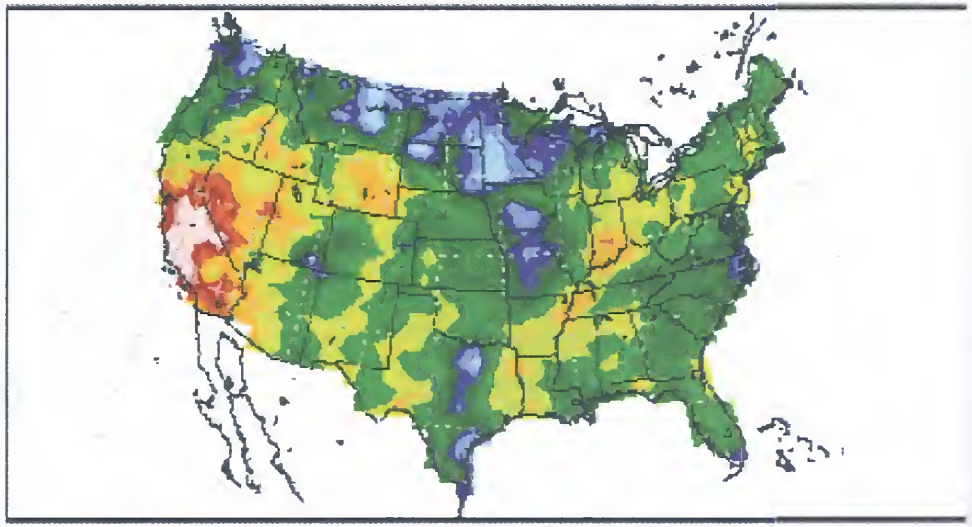
National Weather Service

Protecting Lives and Property



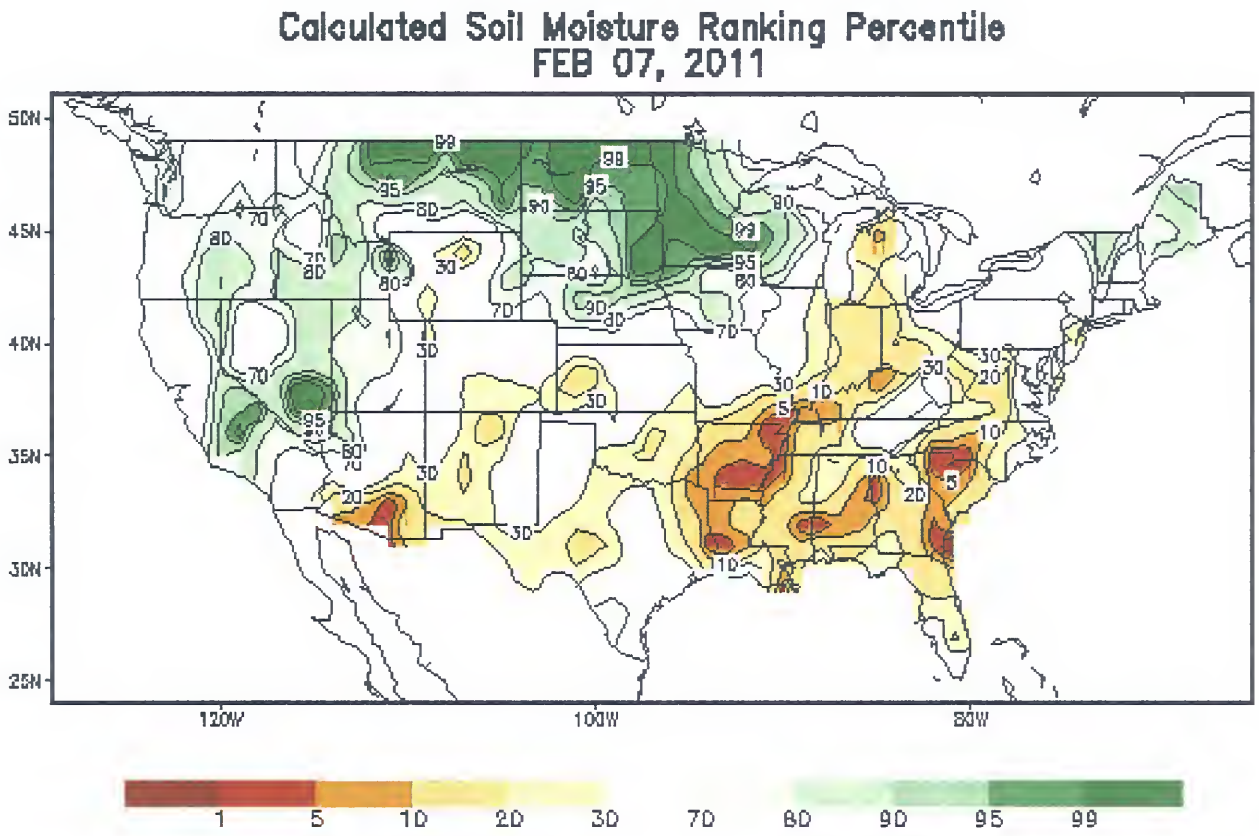
Late Summer/Early Fall Precipitation Anomaly

Total Precipitation Percent of Mean
August 1, 2010 to September 30, 2010

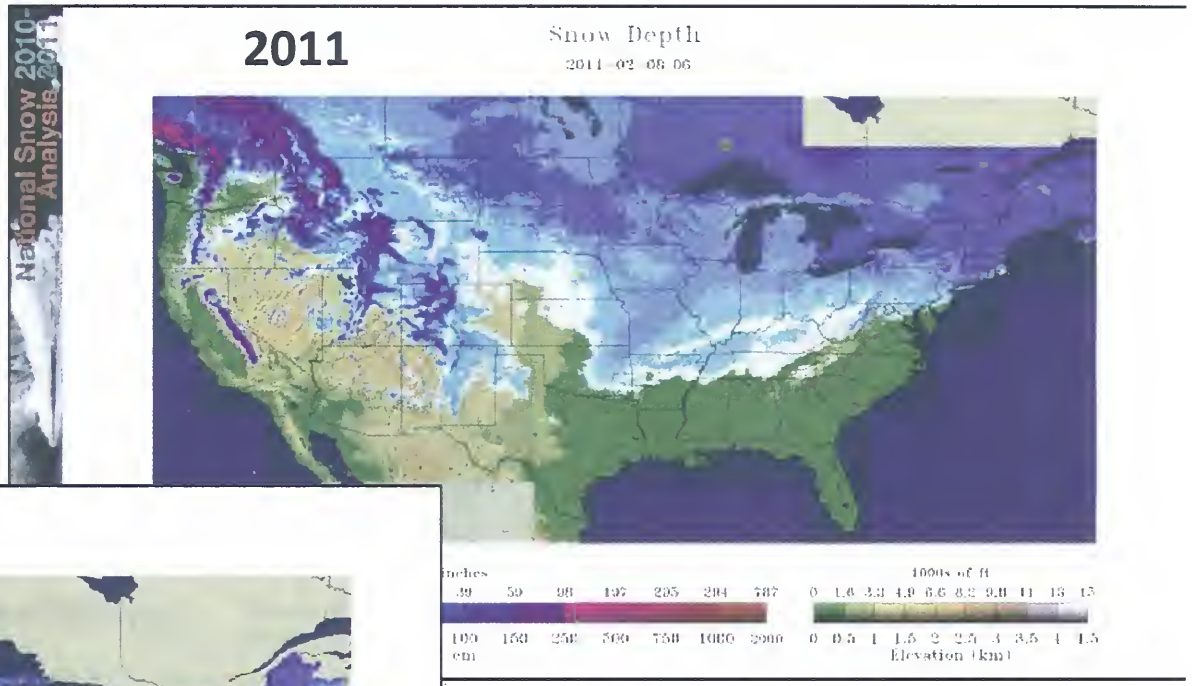


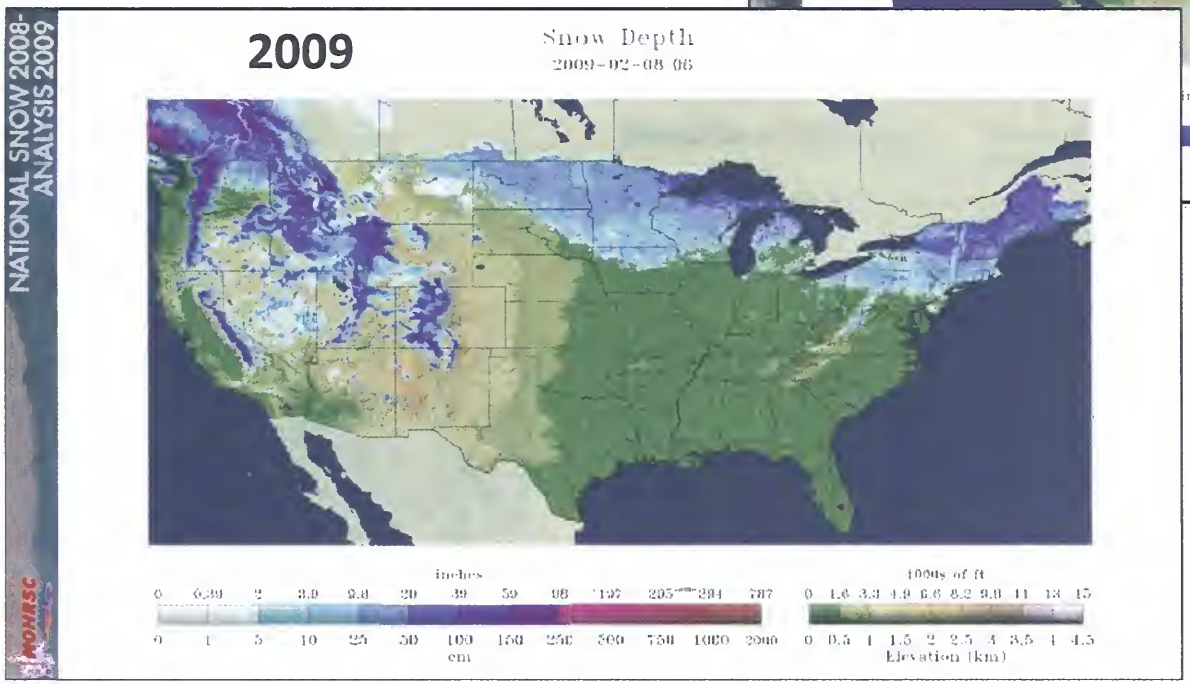
Midwestern Regional Climate Center
Illinois State Water Survey
Champaign, Illinois

Soil Moisture Rankings

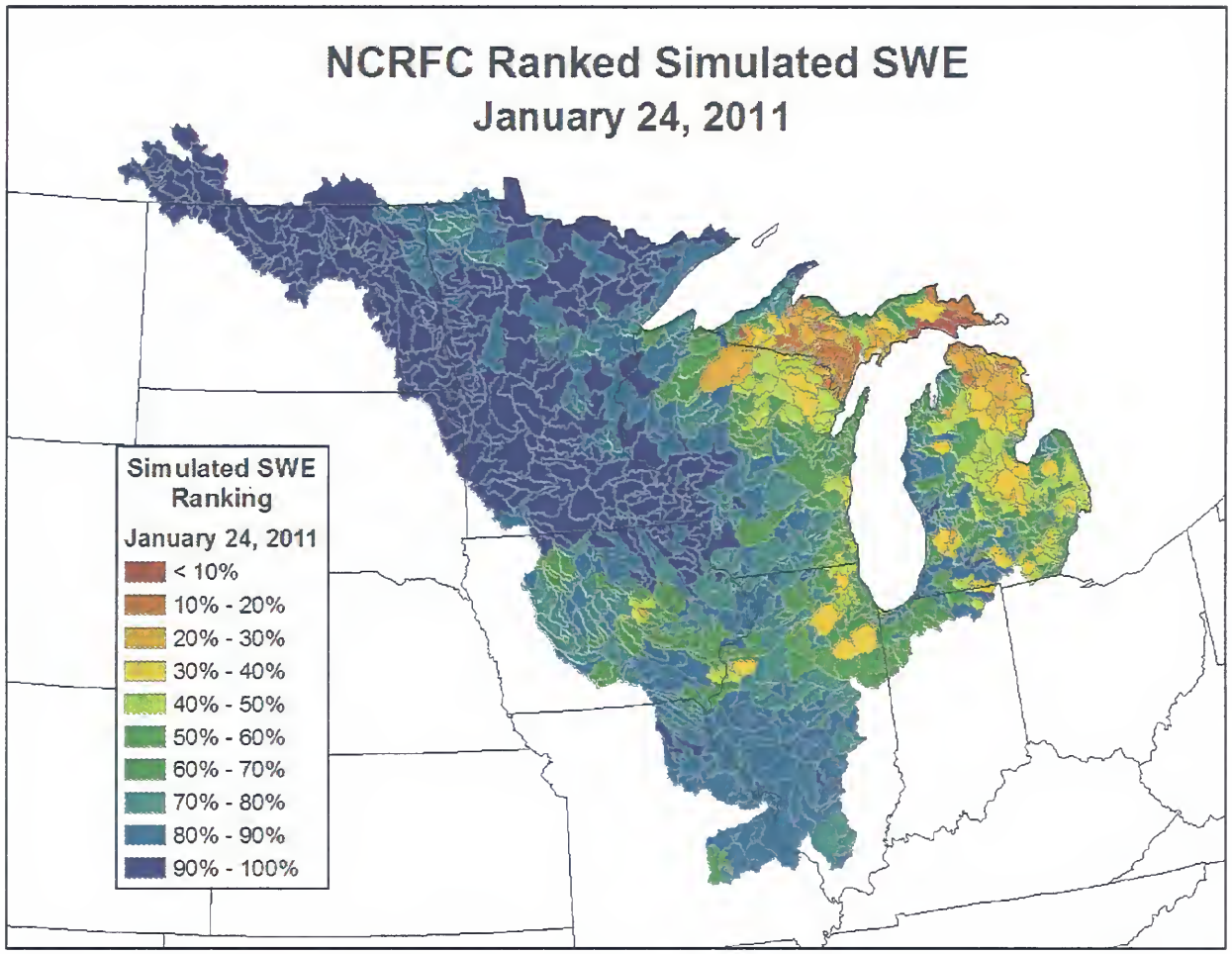


Snowpack Comparison (as of Feb. 8)



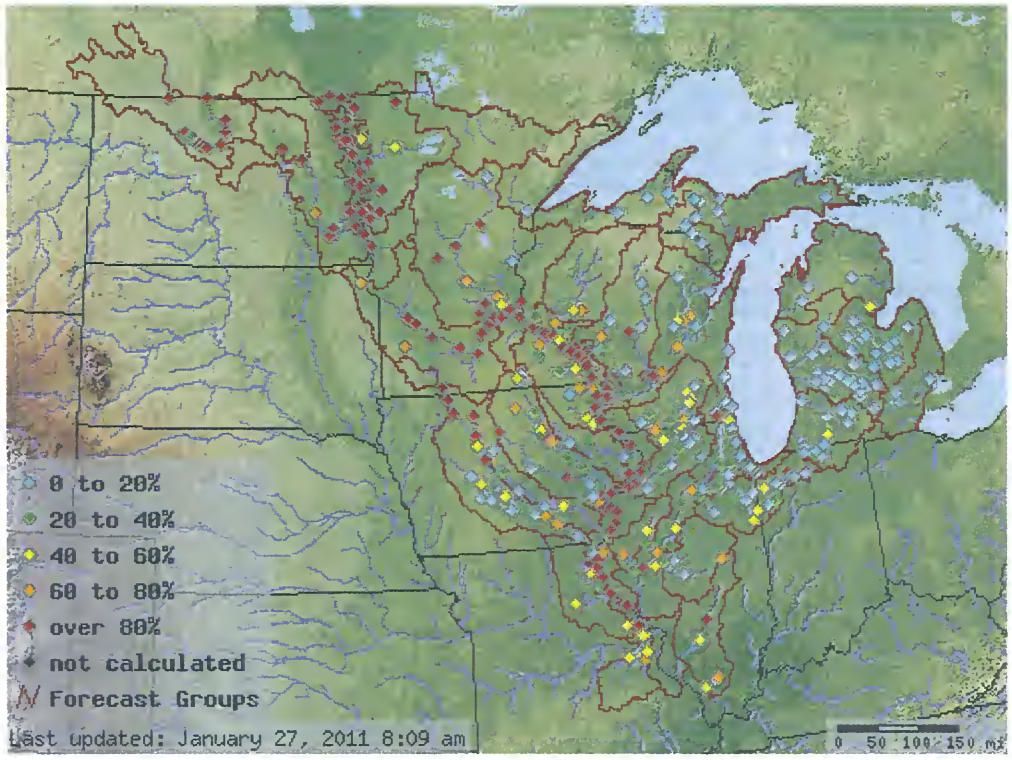


Snow Water Equivalent

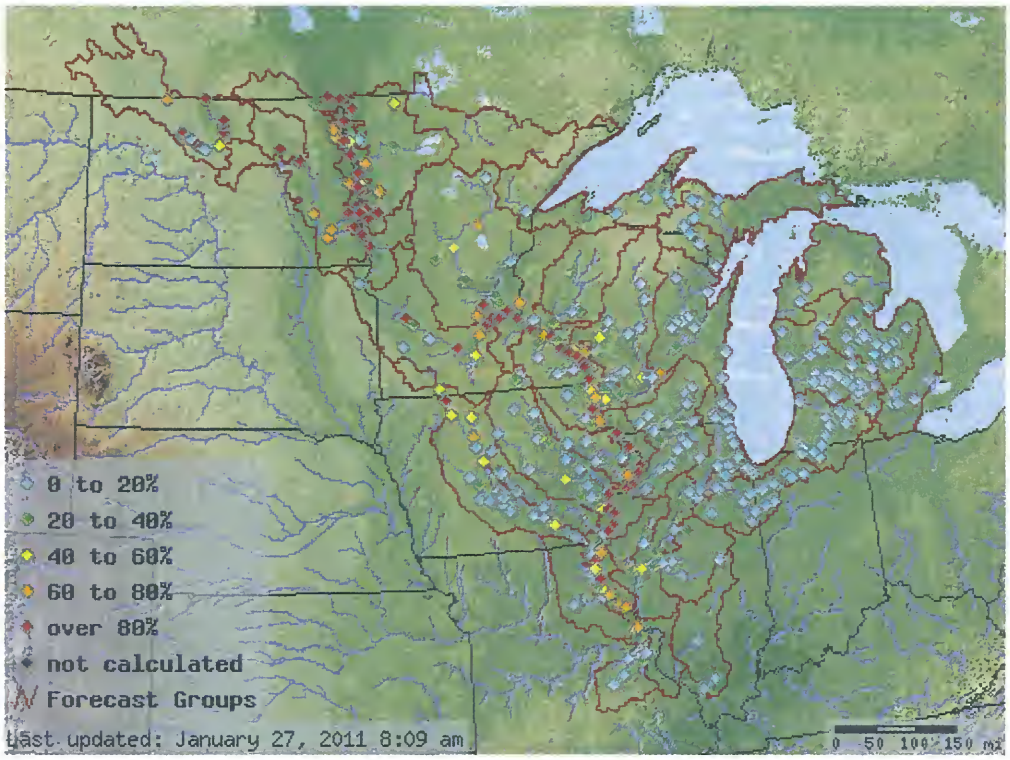


Dark blue shaded areas represent basin averages in the 90th percentile for a 60+ year period of record

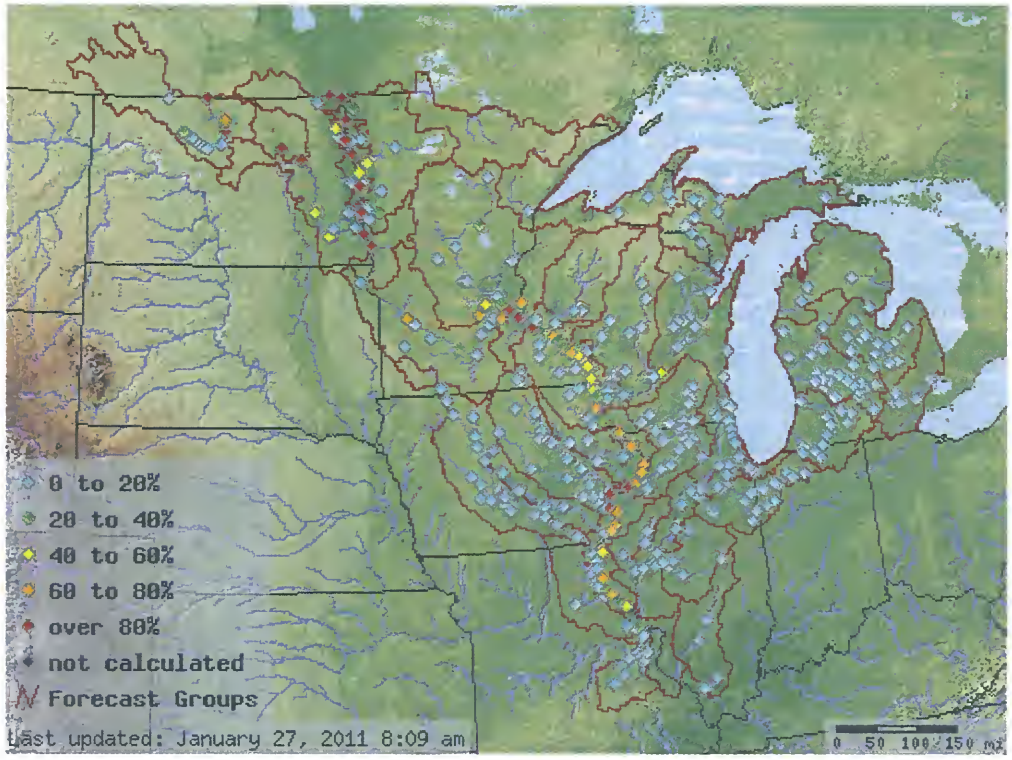
Percent Chance of Minor Flooding from January 31, 2011 to May 1, 2011



Percent Chance of Moderate Flooding from January 31, 2011 to May 1, 2011



Percent Chance of Major Flooding from January 31, 2011 to May 1, 2011



Specifics

- **Fargo** has about a 40% chance of exceeding 38 ft and a 15-20% chance of reaching or exceeding the 40.84 ft record set in 2009.

- **Grand Forks** has about an 85% chance of exceeding major flood stage and near a 10% chance of exceeding the record 54.35 set in 1997.

- **The Big Sioux River at Brookings, SD**, has a greater than 95% chance of exceeding the major flood stage of 12 ft and near a 25% chance of exceeding the 14.77 record set in 1969.

For More Information…

http://www.crh.noaa.gov/ncrfc/?n=sproutlookcurrent

[redacted] NWO

From: [redacted] NWD02
Sent: Saturday, February 12, 2011 8:48 AM
To: [redacted] NWO; Farhat, Jody S NWD02; [redacted] NWD02
Subject: Garrison Releases

[redacted]

We reduced the Garrison releases from 26 to 25 kcfs on Saturday. The Bismarck stage is slowly and steadily climbing and the current reading is 11.64. We're not seeing any change in the trib flows yet. We will continue to monitor.

[redacted]

Message sent via my BlackBerry Wireless Device

[redacted] NWO

From: [redacted] NWD
Sent: Monday, February 14, 2011 10:38 AM
To: Farhat, Jody S NWD02
Subject: FW: Mtg with Mr. Carwile - USACE Preparedness (UNCLASSIFIED)
Attachments: NWO Levee Repair Status for 2011 Flood Season.docx; 2011_02_14_NWO_NWS.pptx

Classification: UNCLASSIFIED
Caveats: NONE

Jody,

I was going to show NWO's slide, specifically the snow water equivalents as a heads up to the Division staff today. I didn't want to walk on any toes. Thoughts ?

JKL

[redacted]
CH, Readiness and Contingency Operations Northwestern Division U.S. Army Corps of Engineers
Off# ([redacted] BB# ([redacted]

-----Original Message-----
From: [redacted] NWO
Sent: Sunday, February 13, 2011 8:14 PM
To: [redacted] HQ02; [redacted] NWD; [redacted] NWD; [redacted] NWD
Cc: [redacted] NWK; Schenk, Kathryn M NWO
Subject: RE: Mtg with Mr. Carwile - USACE Preparedness (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

All,

Please see answers from NWO. Let us know if you need anything else.

I have also attached our NWS spring flood outlook, the Omaha District isn't really shown on the one that was sent out.

Thanks,
[redacted]

[redacted]
Chief, Readiness Branch
U.S. Army Corps of Engineers - Omaha District
1616 Capitol Ave., Ste 9000
Omaha, NE 68102
[redacted] Office
[redacted] Blackberry
[redacted]@usace.army.mil

-----Original Message-----
From: [redacted] NWD

Sent: Friday, February 11, 2011 10:25 AM
To: [redacted] NWK; [redacted] NWO; Cenwk-EOC NWK; CENWO-EOC NWO
Cc: [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD
Subject: FW: Mtg with Mr. Carwile - USACE Preparedness (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Data call from HQ. Please provide your answers to both NWD and Germaine by 1100 hours Central on Monday 14 February.

For the levee questions, that want to know the number repaired, the number being constructed, number scheduled for repair (w funds) and the number with no funds and won't be repaired. If there are any levees that are under significant threat, please go into detail on each.

[redacted]

-----Original Message-----
From: Hofbauer, Germaine HQ02
Sent: Friday, February 11, 2011 6:15 AM
To: [redacted] NWD; [redacted] MVD; [redacted] LRDOR
Cc: [redacted] NWD; [redacted] HQ02
Subject: FW: Mtg with Mr. Carwile - USACE Preparedness (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Divisions,

Bill Irwin, our FEMA LNO is scheduling a meeting with Ms. Durham-Aguilera and Mr. Carwile at FEMA, to discuss potential spring flood impacts. We are using your Commander's Assessment, FY2011 Potential Flooding, as a starting point and additional information on the following items at a minimum:

- Improvements made to mitigate potential flooding (i.e. Grand Forks project, levee rehab work completed). What levee work has been completed since 2008-2009 flooding for MVP, MVR, NWO, and LRL in the potentially impacted areas? Which rehabs are not completed.

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Also, NWD and MVD, what joint coordination is underway within North Dakota as both NWO and MVP conduct emergency response there?

Need your response by 12 noon EDT on Monday, 14 Feb 2011. Any questions, call me at 202-761-4970.

Thanks,
[redacted]

-----Original Message-----
From: [redacted] HQ02
Sent: Friday, February 11, 2011 8:40 AM
To: [redacted] HQ02
Subject: FW: Mtg with Mr. Carwile - USACE Preparedness (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

-----Original Message-----
From: Irwin, William (OGA) [mailto:William.Irwin@associates.dhs.gov]
Sent: Thursday, February 10, 2011 9:12 AM
To: [redacted] HQ02
Cc: Woodard, Steven; Smith, Thomas P COL HQ02; [redacted] HQ02; [redacted]
HQ02
Subject: Mtg with Mr. Carwile - USACE Preparedness

Ma'am. Mr. Carwile asked that I set up a meeting for you to come to FEMA HQ to discuss USACE actions in anticipation of potential significant flooding this spring. The NWS provided the attached presentation this morning at the daily operations briefing (FEMA Administrator, Deputy Administrator and other leadership were in the audience). I will work with Ms. Colter to set a time for the meeting. Potential topics would include:

- Improvements made to mitigate potential flooding (i.e. Grand Forks project, levee rehab work completed).
- Reservoir control measures being taken in anticipation of potential flooding.
- Floodfight team status.
- Emergency contracting capabilities and capacity.
- Dams and levees of concern in areas where flooding may be expected.
- Equipment and supplies staged, to include HESCO barriers, pumps, sandbags.
- Ice jam expertise and response capabilities.
- Potential for advance measures projects.
- USACE/State and Local floodfight planning and coordination.

Also, for Situational Awareness, the FEMA Future Ops requested a meeting on Monday with the USACE operations and future ops planning team to discuss joint Spring flooding planning. This invitation went to Liz Miller, Ron Davis and Germaine Hofbauer.

v/r,

[redacted]

U.S. Army Corps of Engineers

[redacted]

[redacted]

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

NWO Emergency Operations

(1) Abnormally High Snowpack and high snow water equivalents throughout the Omaha District. The unusual conditions are widespread across a large geographical area.
(2) All reservoirs with the exception of Garrison Dam in ND will have their entire flood control pool evacuated prior to 01 Mar.
(3) Received request for technical assistance from the State of NE. Working with CRREL and in-house ice expert. Developed technical report that indicates a moderate to high probability of ice jams along the Platte River in NE. Recommend ice dusting. Governor has approved the dusting and the State will be dusting the river on 2/15.
(4) Received request for technical assistance from the State of ND. Developed technical report that indicates a moderate to high probability of ice jams throughout the State of ND. State is currently determining path forward with possible dusting.
(5) Anticipate request for assistance from the States of WY, MT, ND, and SD as well as the Ft. Belknap and Rocky Boys Tribes in MT and the Cheyenne River Sioux, Sisseton, Flandreau, and Standing Rock Sioux Tribes in SD. Anticipate these requests within the next couple of weeks.
(6) NWO has been communicating with MVP on a weekly basis. Coordination between the District's to complete a USACE PL 84-99 authority fact sheet has occurred. NWO met with the State of ND on 18 Jan. A joint meeting between NWO, MVP, and the State of ND occurred on 10 Feb. Authorities were discussed as well as ensuring that the responses from both District's were equivalent.
(7) NWO has also been communicating weekly with NWK as most of the water will transition to their District this Spring.
(8) The Governor of ND declared a Statewide Flood emergency on 11 Feb. Below is the press release from the Governor's Office:

Dalrymple Declares Statewide Flood Emergency
February 11, 2011
BISMARCK, N.D. – Gov. Jack Dalrymple today issued a statewide disaster declaration in preparation for potential spring flooding in river basins throughout the state.

In issuing the disaster declaration, Dalrymple cited heavy snowpack on saturated land around the state and flood outlooks issued by the National Weather Service and National Oceanic and Atmospheric Administration that indicate a strong potential for flooding in the Devils Lake, Souris River, Red River of the North, James River and Missouri River basins.

"The forecasts clearly show there is significant potential for flooding that may exceed local response capabilities in areas across the state," Dalrymple said. "This emergency declaration is an important step in having state resources at the ready to protect people and property from significant spring flood events."

Factors leading to the current flood projections include excessive rain in 2009 and during the fall of 2010 that have saturated soils; the current snowpack's water equivalent which exceeds 90 percent of state's historic full winter precipitation and full surface water storage in sloughs, ponds and drainage areas.

Dalrymple is in regular communications with state agencies, the North Dakota National Guard and the U.S. Corps of Engineers to facilitate the planning for spring flood assistance. On Monday, Feb.7, Dalrymple directed a half-day meeting that brought together the North Dakota Department of Emergency Services, the North Dakota Department of Health, the North Dakota Department of Agriculture, other state agencies and the North Dakota National Guard to coordinate statewide flood-preparation efforts.

NWO Levee Repair Status for 2011 Flood Season

(1) The Omaha District currently has six construction projects due to the 2008 and 2009 flood event that are physically complete and in the final closeout phase. This information is summarized in Table 1.

(2) After the 2010 Spring and Summer Midwest Floods, the Omaha District received twenty-four requests for assistance for damaged levees enrolled in the PL 84-99 program. A field investigation was conducted and a Damage Survey Report (DSR) was prepared for each project. The purpose of the DSR was to initially document the damage and determine if the project was likely to qualify for assistance. If the project was likely to qualify for rehabilitation assistance, the full Project Information Report (PIR) was prepared in accordance with ER 500-1-1.

(3) Eight projects did not qualify for assistance because the damage was considered normal O&M, did not impact the integrity of the levee or they did not have a Benefit Cost Ratio greater than 1.0. The district completed fifteen PIR's that were approved by the Division Commander. This information is summarized in Table 2.

(4) One PIR for the Omaha Fish and Wildlife Club is still in progress. The U.S. Fish and Wildlife Service (USFWS) expressed concern over potential impact to wildlife and the district has not been able to complete the Environmental Assessment (EA). The district is working with USFWS to resolve this issue and move forward with the project through a Section 7 Consultation.

(5) A request for PIR funds for the Missouri River Levee Unit L624-627, Council Bluffs, IA was sent to NWD and subsequently to HQ on 04 January and 08 February 2011. PIR will be initiated as soon as funds are received.

Table 1. 2008/2009 Omaha District Levee Rehabilitation Projects

Project	Location	Status	Contract Amount

Mandan (June 2010 Contract)	Heart River, Mandan, ND	Final Closeout	$1.56 million
Little Sioux – Nagel	Little Sioux River, Monona Co, IA	Final Closeout	$4.1 million
L624-627	Mosquito Creek, Pottawatomie Co, IA	Final Closeout	$850,000
L611-614 (2008 contract)	Upper Pony Creek, Pottawatomie Co, IA	Final Closeout	$2.2 million
L611-614 (2009 contract)	Upper Pony Creek and Missouri River, Mills and Pottawatomie Co, IA	Punch List Items – 01 March 2011 Completion date	$3.1 million
R613	Big Papillion Creek, Sarpy Co, NE	Final Closeout	$1.2 million

Table 2. 2010 Omaha District Levee Rehabilitation Projects

Project	Location	Status	Contract Amount
Forsyth FPP (Dec 2010 Contract)	Yellowstone River, Forsyth, MT	Contract Awarded – Completion 01 March 2011 Substantially Complete – Spring Seeding Remaining	$613,067
Mandan, ND (Dec 2010 Contract)	Heart River, Mandan, ND	Contract Awarded – Completion 01 March 2011 Earthwork Substantially Complete	$2.0 million
L611-614 (Dec 2010 contract) (Spring and Summer)	Upper Pony Creek and Missouri River, Mills and Pottawatomie Co, IA	Contract Awarded – Completion 01 December 2011 – All drainage structures will be complete by 01 March 2011	$32.5 million
L550 (Dec 2010 Contract)	Atchison County, MO	Contract Awarded – Completion 01 December 2011 – All priority areas** will be complete by 01 March 2011	$10.1 million
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]

[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]

No issues expected at any of these 2008/2009 repair locations.

Initial Priority 1 rehabs that were funded – All priority areas will be repaired by 01 March 2011. Remaining repairs will occur by 01 Dec 2011.

[redacted]

[redacted]

[redacted] NWO

From: Farhat, Jody S NWD02
Sent: Wednesday, February 16, 2011 7:14 AM
To: [redacted] NWO
Subject: Re: Flood Update #1 (UNCLASSIFIED)

Thanks, [redacted] I just wanted to make sure I had the latest information since I have to give a Water management update to MRRIC today.

Have a good day!

Jody

----- Original Message -----
From: [redacted] NWO
To: Farhat, Jody S NWD02
Cc: [redacted] NWD02; [redacted] NWD02; [redacted] NWD02
Sent: Wed Feb 16 06:59:10 2011
Subject: RE: Flood Update #1 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

(I apologize if you have received this multiple times, but am having issues with my email.)

Jody,

You are correct in saying in a "few specific areas", I just didn't choose my wording well tonight. I will adjust in an update and the next report as well.

Thanks,
[redacted]

[redacted]
Chief, Readiness Branch
U.S. Army Corps of Engineers - Omaha District
1616 Capitol Ave., Ste 9000
Omaha, NE 68102
[redacted] Office
[redacted] Blackberry
[redacted]@usace.army.mil

-----Original Message-----
From: Farhat, Jody S NWD02
Sent: Wednesday, February 16, 2011 1:23 AM
To: [redacted] NWO
Cc: [redacted] NWD02; [redacted] NWD02; [redacted] NWD02
Subject: RE: Flood Update #1 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

[redacted] are the snow water equivalents at record levels "across the District" or just in a few specific areas? From what I've seen, it seems that the snow is higher than it was last year at this time in some locations (especially eastern Montana), but for the most part, it's less

widespread (think eastern Nebraska and western Iowa) and with lower water equivalents than the peak snow water equivalents seen last year.

Just trying to understand what your folks are seeing as the threat. I know they are watching it closely and I want to be singing off the same sheet of music.

Jody

-----Original Message-----
From: [redacted] NWO
Sent: Tuesday, February 15, 2011 11:45 PM
To: DLL-CENWO-EOC CMT-ALL
Subject: RE: Flood Update #1 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

1. Situation
NWO currently sits with record snow water equivalent across the District. Main areas of concern are WY, MT, ND, and SD. The areas are seeing above freezing temperatures at this time and are beginning to melt.

2. Weather
Temperatures in the Pine Ridge, SD area projected to be in the 50s through the weekend and then sliding back into the low 30s with 30% chance of precipitation. In the 5-day QPF, totals of 1" of precip forecasted over the Western portions of MT, WY, and CO with traces across ND, SD, and NE.

3. EOC Operations
EOC remains at Level I - Normal Operations - Hours 0730-1600

On 2/15/2011, NWO requested $30K of Code 200 funding to support EOC Activation.

Total Code 200 Funding received to date for this event: $0 Number of personnel supporting EOC Operations: 1

The EOC is continuing to coordinate with the Oglala Sioux Tribe on the Pine Ridge Reservation, the State of SD, and FEMA Region VIII.

NWO received a request for assistance from the Tribe on 15 February 2011.

3.1 Field Operations
NWO Tribal Liaison, Joel Ames, is on site. He got them to stand up an EOC with the first meeting at 0900 tomorrow. He has them talking now as today they were providing different request from different positions within the Tribe. The State has had a representative on the ground since yesterday but couldn't get them to all come together and communicate.

Current known situation -
4 homes confirmed lost in the Pine Ridge Community area.
One Bridge Closed due to safety concerns.
Construction crews WILL be on shift work monitoring for Ice and debris build up. Removal equipment made available around the clock.
Tribe is out of Sandbags. Found a local source in Rapid to purchase the last 3,000 available. Tribe is still looking for an additional 3,000. State says they do not have any in area to assist.
A section of a key roadway has been shut down due to safety concerns. Tribe now coordinating with SD-DOT.

Assisted Tribe in drafting of Disaster Declaration to State. This may open additional assistance.
Visit to outer areas to begin later tomorrow.
Tribe is seeking any type of stream flow projections that might be available for presentation at morning EOC meeting.
Tribe has asked if Corps could assist in determining proper Culvert size. Current design shows system lacks ability to handle large flows.
Tribe asked when/if FEMA would show up?

[redacted] and [redacted] are ready to deploy to the area with sandbags in the morning. Joel is going to get the official count of the number of sandbags they need at the 0900 meeting.

Water Control will have them a more detailed summary on conditions in the morning but as of now, it appears to have peaked already. Joel also has them monitoring with stakes to determine rate of rise.

We are working with the State to coordinate FEMA. Emails have been sent as well.

4. Crisis Management
Crisis Management Team meeting held on 14 Feb 2011 to prepare for abnormally high snowpack within the District and spring runoff. CMT will continue to be updated through email. If CMT meeting is warranted, the CMT will be notified.

5. Command and Control
COL Robert Ruch, Commander 402.995.2001/402.779.1454 LTC James Jordano, Deputy Commander 402.995.2002/402.350.3747 [redacted] Deputy District Engineer [redacted] Katie Schenk, Chief, Operations Division 402.995.2435/402.926.6257 [redacted], Chief, Readiness Branch [redacted] Natural Disaster Program Manager, Readiness Branch [redacted], Tribal Liaison [redacted]

[redacted]
Chief, Readiness Branch
U.S. Army Corps of Engineers - Omaha District
1616 Capitol Ave., Ste 9000
Omaha, NE 68102
[redacted] Office
[redacted] Blackberry
[redacted]@usace.army.mil

-----Original Message-----
From: [redacted] NWO
Sent: Tuesday, February 15, 2011 12:06 PM
To: DLL-CENWO-EOC CMT-ALL
Subject: Flood Update #1 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

CMT,

Per [redacted]s Contact with the Oglala Sioux Tribe at Pine Ridge Reservation: A large area by the White River and Calico Creek are continuing to flood. Several roads are impassible, with residents trapped in home. Some of the residents are elders requiring Medical Attention. At least one school is at risk of flooding. One Council Member expressed concerns over limited resources. I did speak briefly with the Tribes Acting Emergency Manager, Arlene Catches

Enemy (she is new to this job), she was unaware of the assistance the Corps could provide. She is attempting to reach the Tribal Chairman, John YellowBird Steele, to get the Tribe moving on a request for assistance from the Corps. I will attempt to walk the Chairman through the crafting of the request if he cannot locate the Corps Information packages we sent them. More to follow as information becomes available. FYSA, if we are sending folks there I should be present to assist, OST can be very challenging to work with. We have a Great Opportunity to build a relationship here, want to make sure we do it right.

EM is currently working to contact the Tribe to speak with them directly. Two individuals will depart to provide assistance. Joel will be traveling back from Denver to assist the Tribe as well. We will be asking HQ for Class 200 emergency operations funds due to active flooding.

EM was contacted this morning by Ms. Julia Sage, a representative of the Ponca Tribe in Niobrara, Nebraska. Ms. Sage was requesting technical assistance in the assessment of current ice conditions and flood potential at the Highway 12 and Highway 14 junction. She stated that there is currently no problem. However, contingent on weather conditions, the potential exists for ice jams and flooding. She is interested in knowing what actions would be required to alleviate/prevent flooding and when to initiate same. Two Corps representatives (currently being identified) will deploy on 16 February to meet with Ms. Sage and assess the situation. This is the same area as we have been looking at prior.

Thanks,
[redacted]

[redacted]
Chief, Readiness Branch
U.S. Army Corps of Engineers - Omaha District
1616 Capitol Ave., Ste 9000
Omaha, NE 68102
[redacted] Office
[redacted] Blackberry
[redacted]@usace.army.mil

Classification: UNCLASSIFIED
Caveats: FOUO

Classification: UNCLASSIFIED
Caveats: FOUO

Classification: UNCLASSIFIED
Caveats: FOUO

Classification: UNCLASSIFIED
Caveats: FOUO

[redacted] NWO

From: Farhat, Jody S NWD02
Sent: Saturday, February 19, 2011 11:34 AM
To: [redacted] NWD02
Subject: Re: Gavins Point status (UNCLASSIFIED)

[redacted], thanks for the update. Looks like most locations along the lower river are leveling off or dropping. Surprising that Gapt hasn't started to drop yet, but I'm sure it will soon.

Jody

From: [redacted] NWD02
To: Farhat, Jody S NWD02
Sent: Sat Feb 19 08:45:19 2011
Subject: Gavins Point status (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Jody,

Gavins Point is near 1208.5 this morning. We cut Fort Randall to 8 kcfs yesterday. All of the upstream gages, including Springfield, are dropping but Gavins Point hasn't quite turned over. In fact, some of the gages are falling dramatically. I had Ann schedule 8 kcfs out of FR again this morning. I will check it later today to see if we need further adjustments. At this time it is difficult to estimate tributary flows due to the ice-affected stages.

I didn't send anything to EM on this yesterday. We were thinking it was going to peak around 1208.2 or 8.3.

Give me a call if you have any questions/concerns.

[redacted]

Classification: UNCLASSIFIED

Caveats: NONE

[redacted] NWO

From: [redacted] NWD02
Sent: Thursday, February 17, 2011 3:13 PM
To: Farhat, Jody S NWD02
Cc: [redacted] NWD02
Subject: River/Reservoir Status (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jody,
I just wanted to update you on our current regulation as we are starting to see quite a bit of runoff in some areas.

1. Gavins Point releases remain on 21 kcfs. The Gavins Point pool is near elevation 1207.4.
2. Fort Randall releases were cut to 14 kcfs yesterday (and may need to go lower).
3. Garrison releases remain on 26 kcfs. It looks like quite a bit of the ice has gone out in the upper part of the reach (Washburn has dropped a few feet), and the webcam at Bismarck showed the ice degrading. However, temperatures are predicted to drop significantly starting today and into the weekend and will likely reverse this trend.
4. The current FUI forecast is starting to show some fairly high flows downstream, including being above the Neb City full service target by 20+ kcfs. (NCNE flows near 64 kcfs, and MKC flows near 81 kcfs). The latest NWS forecast (Thursday afternoon) is shown below - nothing above flood stage but Brownville is close. At this point do you have any concerns with maintaining the 21 kcfs Gavins release? It is probably too late to reduce the peaks.

Mike

: ==> This forecast includes obsd precip & 24 hours of QPF <==

: ==> This forecast includes projected snowmelt due to <==
: ==> forecasted daily max/min temperatures for the next 10 days <==

RIVER/STATION	FS	TDY	F O R E C A S T
MISSOURI RIVER			
NEBRASKA CITY NE	18.0	11.8	CREST NEAR 16.3 FT 02/19 PM
BROWNVILLE NE	33.0	27.3	CREST NEAR 32.8 FT 02/19 PM
RULO NE	17.0	10.9	CREST NEAR 15.3 FT 02/20 AM
ST JOSEPH MO	17.0	11.3	CREST NEAR 15.6 FT 02/20 PM
MIAMI MO	18.0	11.0E	CREST NEAR 16.2 FT 02/22 AM
GLASGOW MO	25.0	16.3	CREST NEAR 23.2 FT 02/20 PM
BOONVILLE MO	21.0	12.6	CREST NEAR 19.5 FT 02/21 AM
GASCONADE MO	22.0	13.0E	CREST NEAR 20.7 FT 02/22 AM

Classification: UNCLASSIFIED
Caveats: NONE

[redacted] NWO

From: [redacted] NWD02
Sent: Saturday, February 19, 2011 8:45 AM
To: Farhat, Jody S NWD02
Subject: Gavins Point status (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jody,
Gavins Point is near 1208.5 this morning. We cut Fort Randall to 8 kcfs yesterday. All of the upstream gages, including Springfield, are dropping but Gavins Point hasn't quite turned over. In fact, some of the gages are falling dramatically. I had Ann schedule 8 kcfs out of FR again this morning. I will check it later today to see if we need further adjustments. At this time it is difficult to estimate tributary flows due to the ice-affected stages.

I didn't send anything to EM on this yesterday. We were thinking it was going to peak around 1208.2 or 8.3.

Give me a call if you have any questions/concerns.
[redacted]

Classification: UNCLASSIFIED
Caveats: NONE

[redacted] NWO

From: Tipton, Robert A Col NWD
Sent: Sunday, February 20, 2011 10:01 AM
To: [redacted] NWD; McMahon, John R BG NWD; Anderson, G Witt NWD; [redacted] P NWD; Miles, Steven R COL NWP; Ruch, Robert J COL NWO; Wright, Anthony COL NWS; Hofmann, Anthony J COL NWK; Caldwell, David A LTC NWW; Acheson, William E LTC NWS; Jordano, James J LTC NWO; Capps, Stephan A LTC NWP; [redacted] NWK; Hains, Decker B LTC NWW; Cenwk-EOC NWK; CENWO-EOC NWO; CENWS-EOC NWS; CENWW-EOC NWW; CENWP-EOC NWP; [redacted] NWD
Cc: [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] N NWD; [redacted] ULA; Farhat, Jody S NWD02; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] ULA@SAD; [redacted] NWD
Subject: Re: FEMA National Situation Report for February 20, 2011 (UNCLASSIFIED)

All,

We will be sending updated status today - but please be advised that we do have issues with ice jams on the Platte and Elkhorn rivers in the Missouri Basin and are seeing agricultural flooding currently. We need to keep an eye on this situation.

RT

Message sent via my BlackBerry Wireless Device

----- Original Message -----
From: [redacted] NWD
To: McMahon, John R BG NWD; Tipton, Robert A Col NWD; Anderson, G Witt NWD; [redacted] NWD; Miles, Steven R COL NWP; Ruch, Robert J COL NWO; Wright, Anthony COL NWS; Hofmann, Anthony J COL NWK; Caldwell, David A LTC NWW; Acheson, William E LTC NWS; Jordano, James J LTC NWO; Capps, Stephan A LTC NWP; [redacted] NWK; Hains, Decker B LTC NWW; Cenwk-EOC NWK; CENWO-EOC NWO; CENWS-EOC NWS; CENWW-EOC NWW; CENWP-EOC NWP; [redacted] NWD
Cc: Bhamidipaty, Surya NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] ULA; Farhat, Jody S NWD02; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] NWD; [redacted] ULA@SAD; [redacted] NWD; [redacted] NWD
Sent: Sun Feb 20 07:25:29 2011
Subject: FEMA National Situation Report for February 20, 2011 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Sir,

There is nothing significant within the next twenty four hours reported in the FEMA SITREP for the NWD AOR.

v/r

[redacted]

[redacted] NWO

From: [redacted] NWD02
Sent: Wednesday, February 23, 2011 1:37 PM
To: Farhat, Jody S NWD02
Subject: Fort Randall Elevation (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

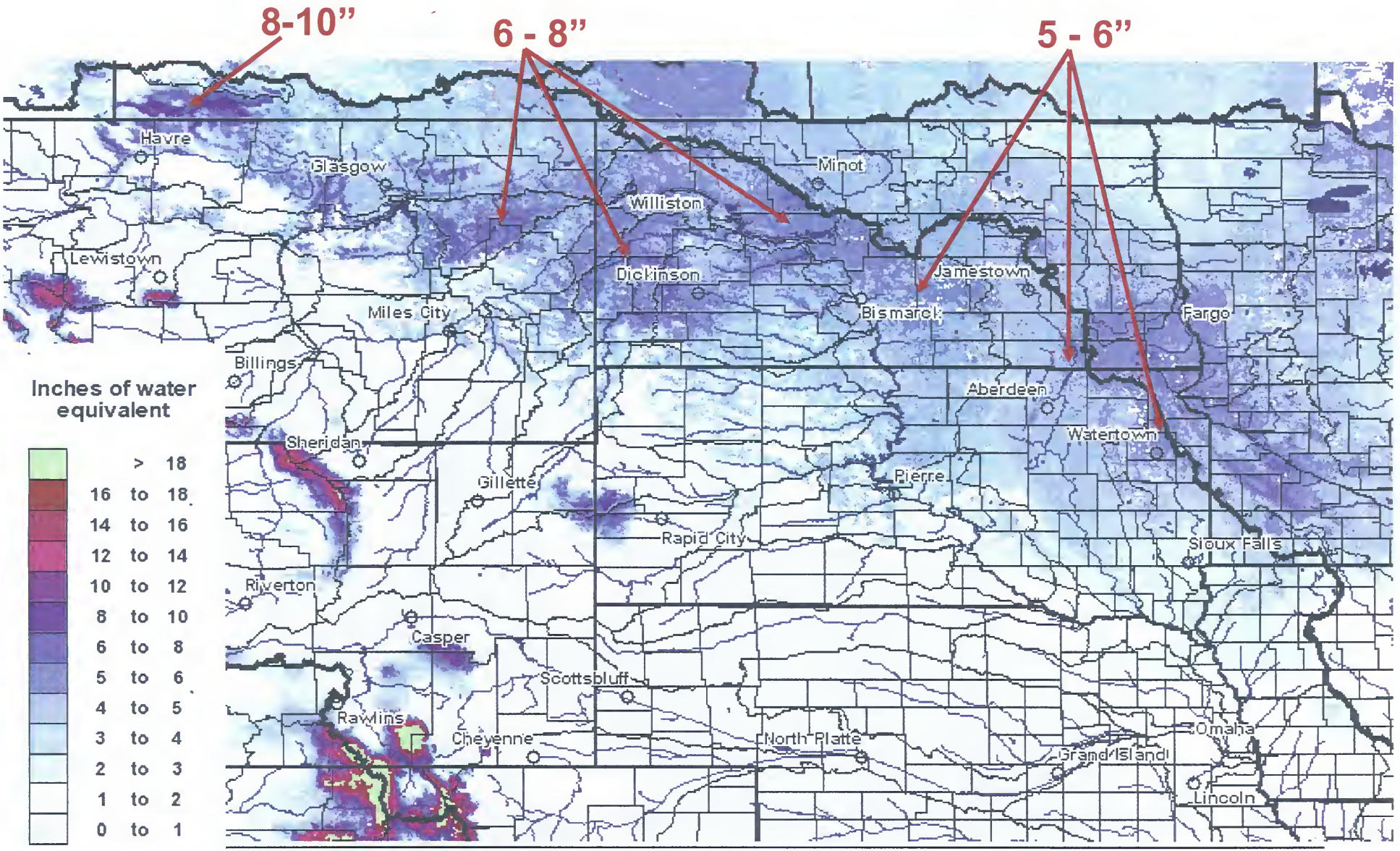
Jody,
I'm not sure if you've looked at the Fort Randall elevation recently, but it's ahead of the monthly schedule due to the high runoff on the White River and also from the significant cuts in the FR releases. The reservoir is currently near elevation 1350.6. We've cut generation from 25,000 MWh to 21,000 MWh, and now Oahe/Bend releases are lower than FR.

My question is, do you want to continue to hold the Fort Randall pool down as we get into March? The monthly study shows the pool climbing to 1355 next month. Quite a bit of the snow up in that area is gone, although they did get additional snow over the weekend. I was thinking we could let it rise toward 1353 instead of 1355. Thoughts?

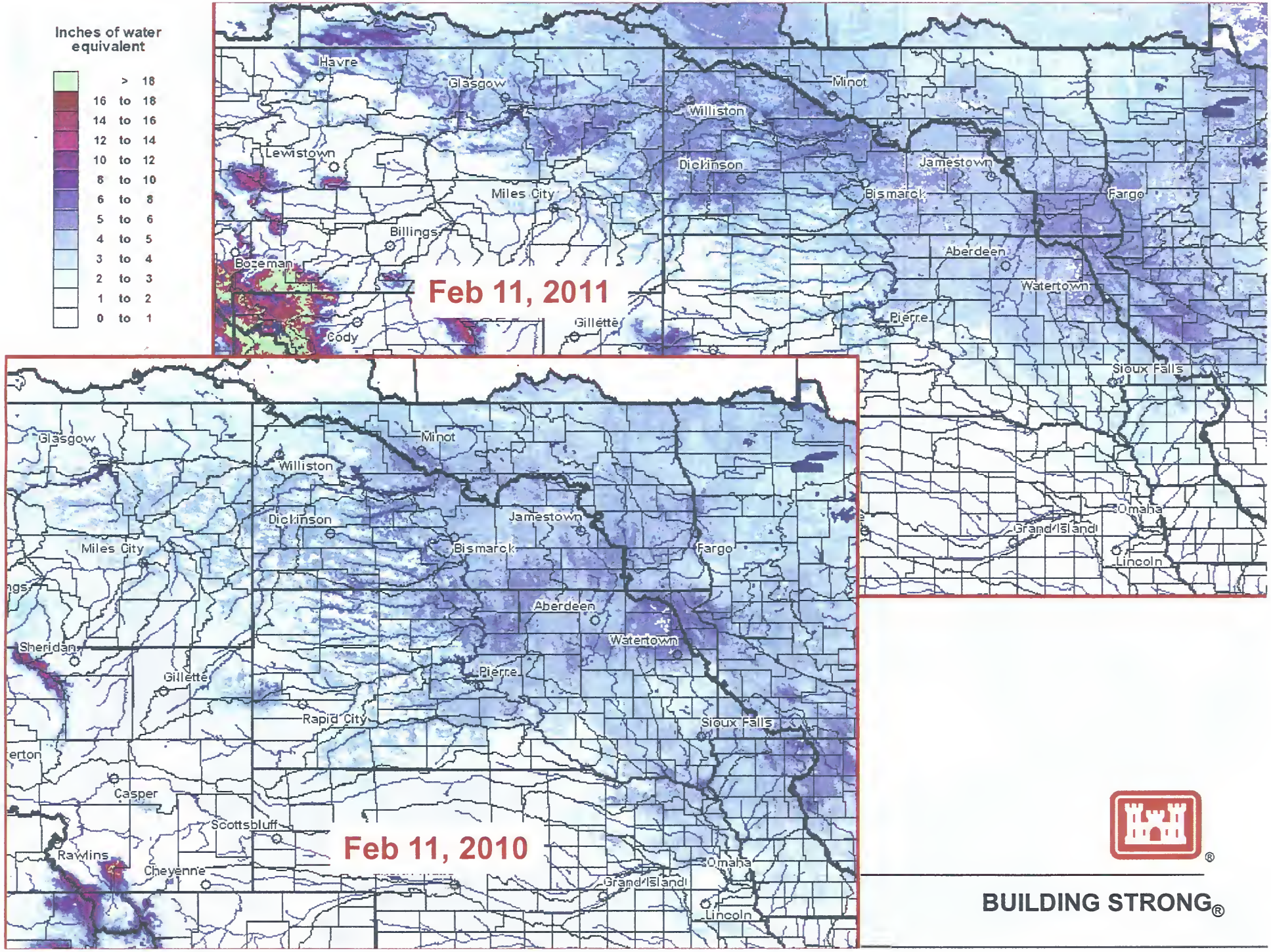
[redacted]

Classification: UNCLASSIFIED
Caveats: NONE

Estimated Snow Water Equivalent as of Feb 11, 2011



BUILDING STRONG®



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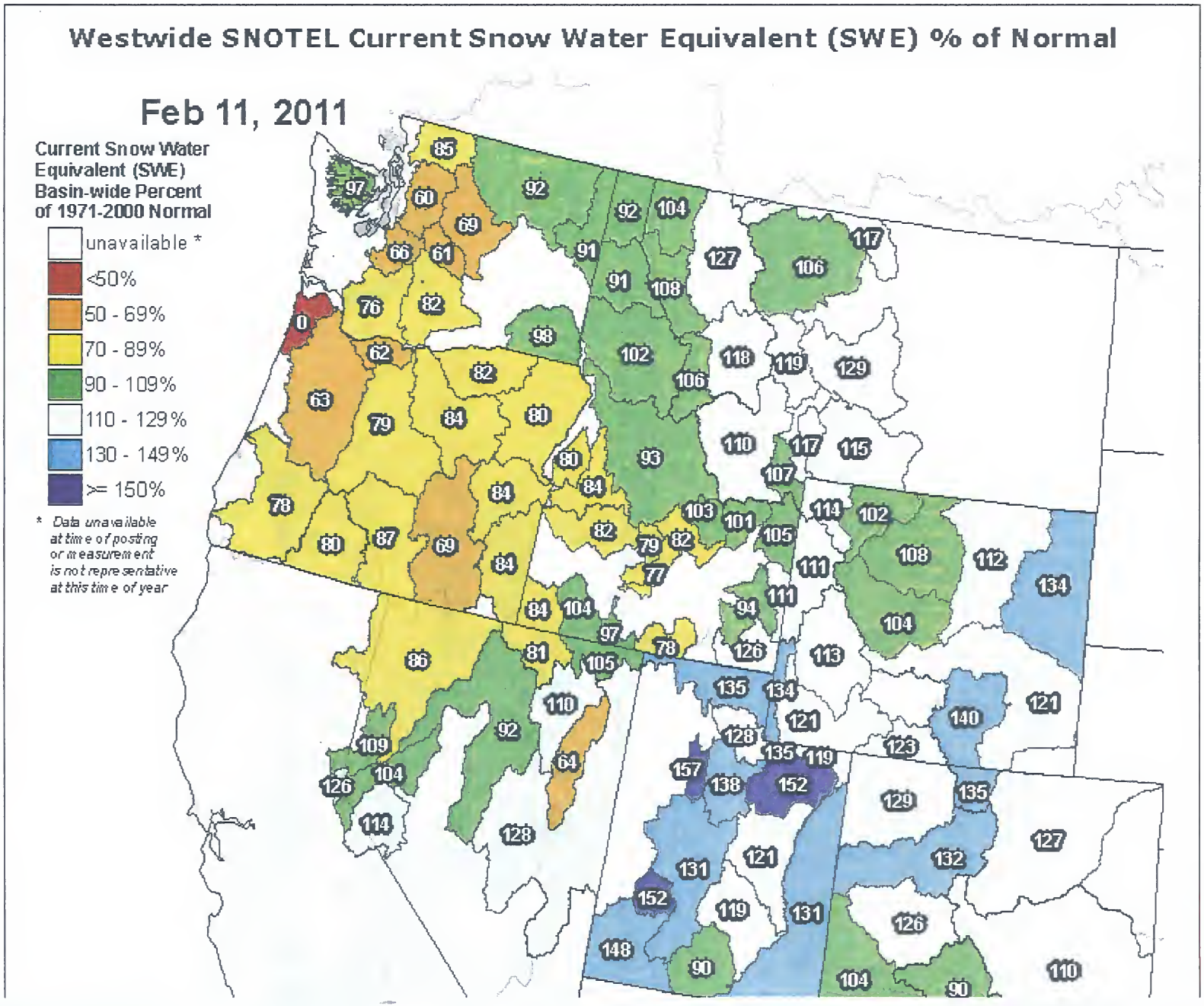
Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal



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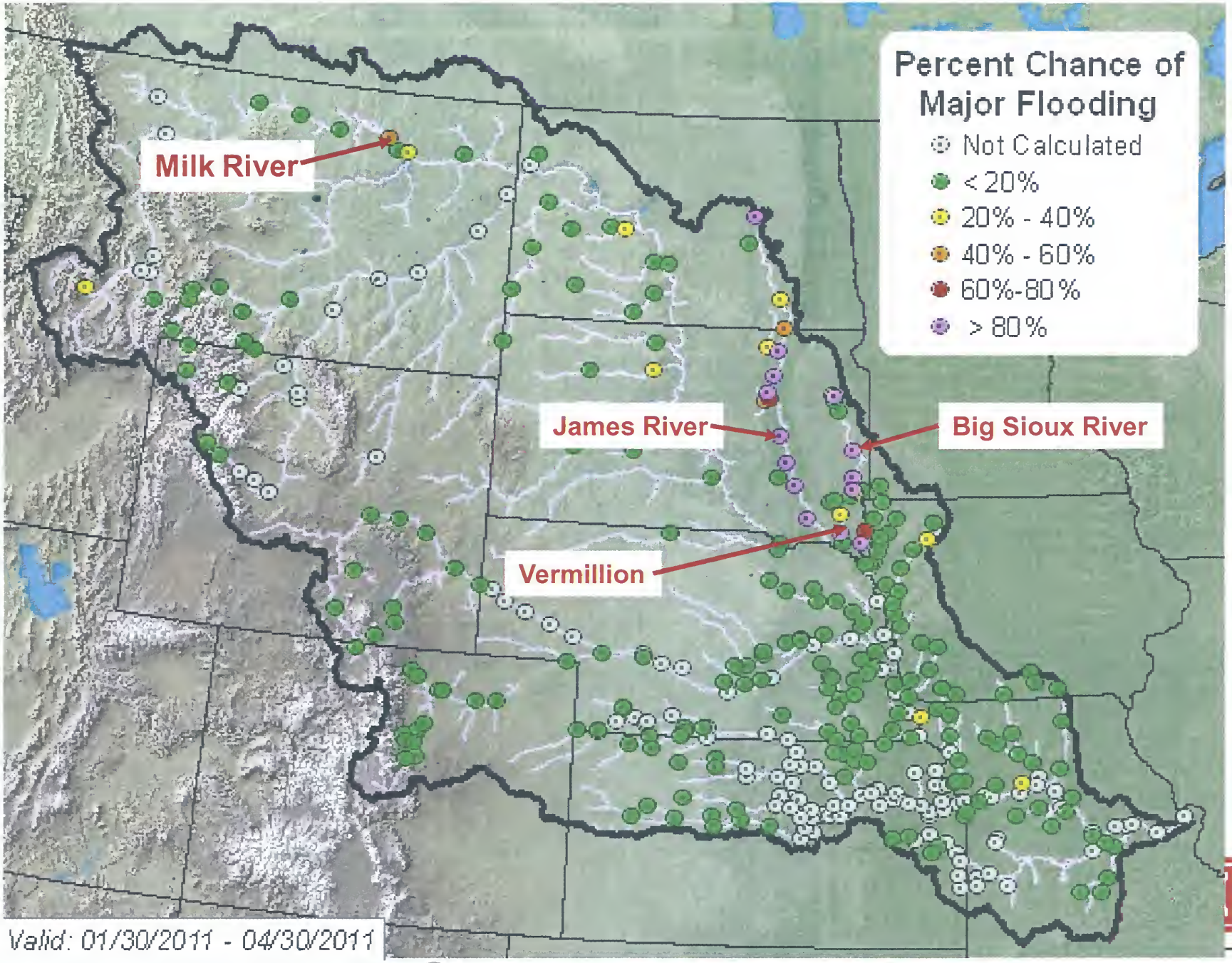

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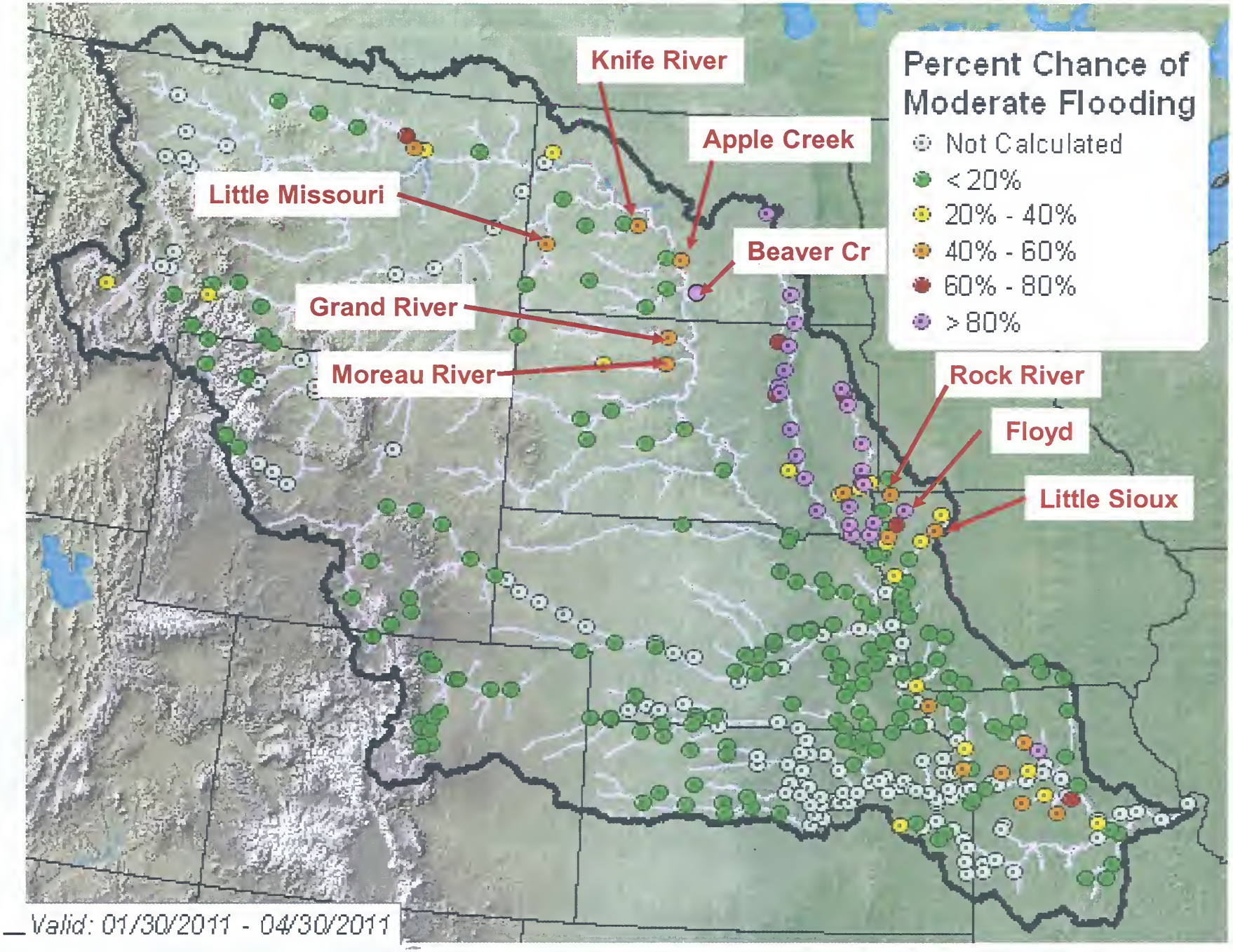
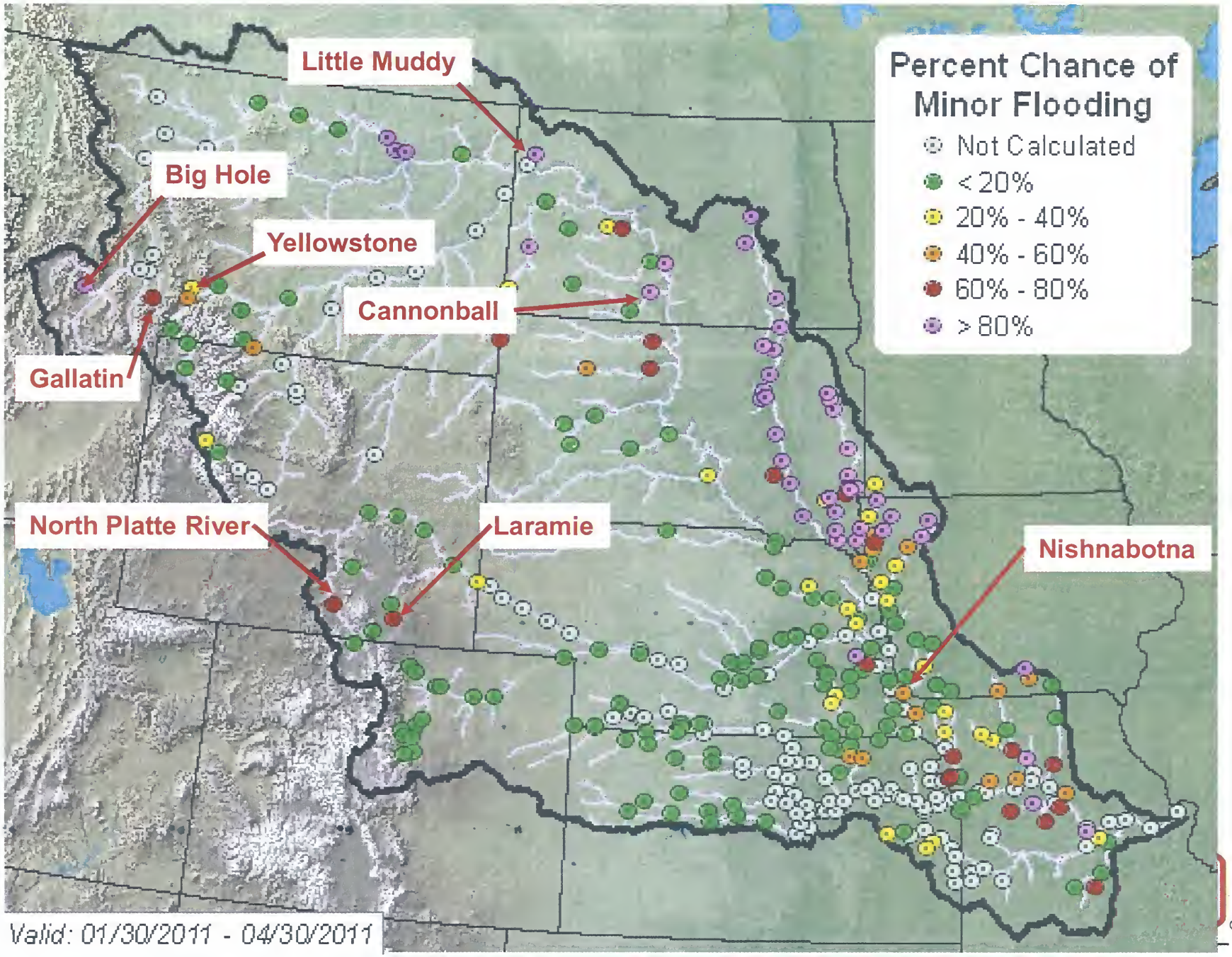

Knife River
Apple Creek
Little Missouri
Beaver Cr
Grand River
Moreau River
Rock River
Floyd
Little Sioux
Percent Chance of Moderate Flooding
Not Calculated
< 20%
20% - 40%
40% - 60%
60% - 80%
> 80%
Valid: 01/30/2011 - 04/30/2011



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Northeast South Dakota Lakes

Lake	Fall 2009 Elevation (NGVD29)	Record Elevation (NGVD29)	Fall 2010 Elevation (NGVD29)
Waubay Lake	1801.35	1804.00 (Jul 1999)	1803.15
Blue Dog Lake	1801.35	1804.29 (Jun 1999)	1803.25
Rush Lake	1801.51	1804.15 (Jun 1999)	1803.25
Bitter Lake	1797.15	1800.25 (Jul 2010)	1800.11
Lake Poinsett	1651.83	1656.43 (Jul 2010)	1654.47

Potential Problem Areas

- Williston, ND
- Hazen, ND
- Bismarck, ND
- Linton, ND
- Jamestown, ND
- Lamoure, ND
- Aberdeen, SD
- Waubay, SD
- Webster, SD
- Davis, SD
- Watertown, SD
- Lake Poinsett, SD
- Dell Rapids, SD
- Akron, IA
- Many small towns, ND, SD, MT
- North Platte/Platte River

[redacted] NWO

From: [redacted] NWO
Sent: Friday, February 25, 2011 8:11 AM
To: [redacted] NWO; 'Chris Temeyer'; [redacted] NWD02; Farhat, Jody S NWD02; [redacted] NWO; [redacted] NWD02; 'joe gorman'; [redacted] NWO; [redacted] NWO; Noon; [redacted] NWO; Ruch, Robert J COL NWO; [redacted] NWO; [redacted] NWD02; [redacted] NWD02; [redacted] NWO; [redacted] NWO; [redacted] NWO; usgs; usgs; [redacted] NWO
Subject: lce-rpt25FEB-11.doc (UNCLASSIFIED)
Attachments: lce-rpt25FEB-11.doc

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

MISSOURI RIVER
DAILY ICE REPORT

SUBMITTED BY CENWO-OD-MR

DATE: **25-FEB 2011**

STATION	*PHONE*	*TIME*	*TOTAL% OPEN CHANNEL*	*AVE % SHORE ICE*	*AVE % FLOAT ICE*	*TYPE & SIZE OF ICE*	*MISC.*
Ponca State Park Jeff	*(402) 755-2284*	*0800*	*No Report*				
Belle of Sioux City M 732.0 Sean	1-800-424-0080 712-294-5614	0800	65%		35%	10 to 15 ft slushy ice pads	
IPS Sioux City M718.4	1-712-277-6303		No Report				
Decatur Charlotte M 691.0	1-402-349-5662	0800	80%		20%	2 to 10ft pan ice	
Ft. Calhoun M 645.9	533-7401 533-7403		No Report				
Mo River Proj Ofc M 627.0	453-0202	0800	95%		5%	3 to 8 ft pan ice	
IPLC Co Bluffs M 606.0	366-5322						
Plattsmouth Bridge M 591.5	298-8021		No Report				
Neb City M 556.3	402-874-8146	0800	100%		0%		
Cooper Nuclear M 532.6	1-402-825-5624	0800	100%		0%		

Camp Rulo M 498.0	1-402-245-4096		No Report				

[redacted] NWO

From: [redacted] NWO
Sent: Monday, February 28, 2011 10:09 AM
To: [redacted] NWD02; [redacted] NWD02; [redacted] NWO; [redacted] NWD02; [redacted] NWD02; [redacted] NWD02; DLL-CENWO-OD-OA OPER; Farhat, Jody S NWD02; [redacted] NWO; [redacted] NWO
Cc: [redacted] NWO; [redacted] NWO; [redacted] NWO
Subject: Ice Conditions Below Oahe
Attachments: Ice Location Oahe 2011.xlsx

All,

Attached is today's ice location, ice cover to car bridges at 1066.5, some isolated small open spots downstream of that location.

[redacted]
Engineer Technician
US Army Corps of Engineers
Oahe Project
([redacted])

Oahe Ice Monitoring Data

Date/Time	Mile Marker	Temp (°F)	Sky/Wind (mph) Conditions	Add'l Comments
1/3/2011 0900	1056.0	27	Cloudy/20 NW	Approx. 1 mile north of Antelope Creek
1/4/2011 0845	1057.0	1	Sunny/10 NW	Ice moving upstream, channel narrowing
1/5/2011 0930	1055.1	20	Mostly Cldy/10 WSW	Ice retreating downstream
1/7/2011 1100	1050.5	30	Mostly Cldy/30 WSW	Cold weather in the immediate forecast
1/10/2011 0930	1055.5	4	Cloudy/snow 15 w	Cold overnights forcasted for this week
1/11/2011 0945	1057.5	-7	Hazy/23 NW	Cold weather has arrived. River narrowed.
1/12/2011 0830	1061.0	-13	sunny/05 SE	Ice is above Farm Island/Oahe froze over
1/12/2011 1500	1062.0	-2	sunny/05 SE	Narrowed channel between 1062-1064
1/13/2011 0830	1063.0	13	Mostly Cldy/10 SE	Ice moved upstream, weather is warming
1/14/2011 0830	1062.5	10	Sunny/ calm	Ice pushing downstream,channel widening
1/18/2011 0830	1062.0	2	Hazy/5NW	Narrowed channel between 1062-1063
1/18/2011 1630	1061.0	1	Snow/calm	Narrowing at 1062
1/19/2011 0800	1063.5	-11	Cloudy/calm	Narrowed channel between 1063.5-1065.0
1/20/2011 0845	1062.0	4	P Cloudy/ 10NNW	Very narrow channel between 1062-1065
1/21/2011 0830	1064.0	7	Cloudy 15 NNW	Ice bridge formed at 1064.0 approx 150-200 ft across channel then open to 1062
1/24/2011 0945	1060.5	32	Mstly Cdly/20 NW	Ice Bridges at 1065.0 and 1061.5 - 150 yds ea.
1/25/2011 0915	1060.0	11	Sunny/Calm	Ice Bridge remains at 1061.5 200yds
1/26/2011 0930	1063.5	11	Sunny/Calm	Ice Bridge has moved upstream significantly and widened due to ice pieces building up against it. Open water again at 1061.5 to approximately 1060.0

1/27/2011 0900	1061.5	35	Sunny/Calm	Ice Bridge has broken up and water is now open and free flowing to rm 1061.5. The channel has widened almost bank to bank.
1/28/2011 0900	1058.0	33	Sunny/10 NW	Warm Temps have pushed ice downstream
1/31/2011 0900	1062.5	-2	Snow/20 NNW	Difficulty getting exact location due to blowing snow and low visibility. Channel is narrowing and ice building up next to shore. Cold temps in forecast next few days.
2/1/2011 0830	1064.0	-3	Overcast/20 NNW	Ice moving upstream, ice building close to bridges.
2/2/2011 0900	1065.5	-14	Sunny/calm	Narrow Channel from 1065.0 to 1066.5 then ice bridge again from 1066.0 to 1068.0, channel is narrow again up to about 1070. Ice forming along shore line anywhere it is open.
2/3/2011 0900	1065.5	13	Sunny/7NW	1065.5 to 1067.5 Ice is patchy with some open water. Ice along shoreline making narrowed channel to to 1069.0
2/4/2011 0900	1065.0	27	Sunny/15 W	River is now open clear to 1065.0, narrow channel still from 1065 to 1067.
2/7/2011 0900	1059.0	8	Overcast/5W	River opened up downstream several miles after warm weekend, cold overnight temps again the next few days.
2/8/2011 0900	1060.5	-8	Overcast/calm	Ice has moved upstream with colder air, channel has also narrowed up to 1065.0.
2/9/2011 0830	1061.0	-1	Sunny/W15	Ice has moved upstream slightly
2/10/2011 0830	1060.0	10	Overcast/Calm	Ice is moving downstream

2/12/2011 1600	1055.0	51	Sunny/ 30 NNW	Ice moved DS to Antelope Creek Area
-	-	-	-	Suspend ice reports until further notice.
2/23/2011 1000	1061.0	9	Sunny/5 NNW	Ice Bridge from 1066 to 1063.5, appears to be opening a channel today, cold temps are in the forcast.
2/25/2011 0830	1061.5	-14	overcast/10NW	Ice moved upsteam slightly overnight
2/28/2011 0930	1066.5	3	sunny/calm	Ice cover to car bridge, some isolated open spots at 1065.0.